

W.P.

1-10-79

# Coastal Zone Management Study

Massachusetts  
Library  
41T393.M42 R48 1979

HT  
393  
.M42  
R48  
1979

City of Revere      George V. Colella, Mayor  
August 1, 1979

#### ACKNOWLEDGEMENT

This report was produced as a result of a Community Assistance Grant from the Massachusetts Coastal Zone Management Office to the City of Revere.

The basic purpose in undertaking this study was to undertake an analysis of growth and development pressures on the Saugus Marsh and the contiguous urbanized areas. Following the analysis, the report suggests new development policies and implementation techniques.

The study staff acknowledges the assistance of the Citizen's Advisory Group and Mayor George V. Colella in providing policy advice and recommendations.

## TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
One - Environmental Analysis	1
. Annotated Bibliography	2
. Environmental Assessment	18
Two - Land Use Policy Development	41
. Existing Conditions and Development Policies	42
. Recommended Development Policies and Future Land Uses	57
. Public Meetings	74
Three - Implementation Program	82
. Analysis of Existing Land Use Management Programs	83
. New and Modified Implementation Techniques	107
Four - Wetlands Protection Planning	151
. Memorandum to the Conservation Commission	152
. Incentive to Landowners for Gifts of Land and Lessor Interests for Conservation Purposes	156
Five - Coordination of Flood Control and Drainage Studies	161
. Status Report on Flood Control Activities	162
. Modifications to the Eastern County Ditch	193
. Metropolitan District Commission Revere Beach Reservation Master Plan Data on Drainage and Flooding	219
. Coordination with the Metropolitan District Commission Regarding Improvements to the Eastern County Ditch	225
. Disposition of Items Raised at the March 29, 1979 Meeting on Wetlands Protection within the City of Revere	227
. Review Comments of the City of Revere on the Draft Environmental Impact Statements for the Revere Beach Connector and the North Shore Transit Improvement Project	238

SECTION ONE

Environmental Analysis



## Annotated Bibliography

A. WETLANDS CHARACTERISTICS, VEGETATION, BIOLOGICAL PRODUCTIVITY AND FISHERIES

1. LIFE AND DEATH OF A SALT MARSH, 1968, Teal J., & Teal M., Little Brown and Company.

This book is the best available general reference on salt marshes. It contains substantive information on creation of salt marshes, their productivity, ecology, and conservation. It is a valuable reference to aid lay persons in understanding how a salt marsh functions. It will also aid Conservation Commission members in determining if an area is a marsh.

2. ECONOMIC AND LEGAL IMPLICATIONS OF LAND USE, SAUGUS SALT MARSH, 1973, Massachusetts Audubon Society.

An in depth study of the economic and legal land use alternatives for the Saugus Salt Marsh. Presents mathematical models for the socio-economic and industrial impacts related to the development of the marsh system. The legal implications are used to provide a protection strategy for preserving the marsh. The two basic components of this protection strategy are: 1) imposing limits on fill under wetlands permits or 2) purchasing or recommending that the town take the land by eminent domain.

3. ASSIMILATION OF SEWAGE BY WETLANDS, 1970, Valiela, I., Vince, S., and Teal, J. M. in: Estuarine Research, Crowin, ed. New York.

A technical report dealing with natural sewage treatment by salt marsh plants. Data for many of the general conclusions is based on the Saugus Marsh system. The report details how both household sewage and industrial waste are assimilated by marsh grasses. The main conclusion of the report is that even though marshes act as living filters and "act as free waste treatment for contaminated waters", they should not be considered as possible waste treatment alternatives.

4. STUDY OF THE MARINE RESOURCES OF LYNN-SAUGUS HARBOR, 1972, Division of Marine Fisheries, Department of Natural Resources.

This report is both a historical review and present

day assessment of the fisheries resources of Lynn and Saugus Harbor. Several sampling stations were located in Revere. General geologic, topographic, and water quality data was collected. Both finfish and shellfish populations were estimated. The survey shows that in 1968 Revere had the most productive clam habitat in the study area.

5. ENVIRONMENTAL IMPACT ANALYSIS, I-95, 1973, Ecosystems.

This environmental analysis gives population estimates of fish and shellfish within the Saugus Marsh. It describes the productivity of the marsh in relation to the fisheries and considers the general effects on fisheries of filling in the marsh. (Also see, Flood History, and Water Quality).

B. TIDAL LEVELS AND HYDRAULICS

6. TIDAL CURRENT TABLES 1979, Department of Commerce, National Oceans and Atmospheric Administration.

These tables are published yearly, and give directions and velocities of tidal induced currents for the entire east coast of North America. Page 140 gives current differences and time constants to calculate the currents at the entrance to Lynn Harbor. There is also an explanation of how to calculate current velocities at any time of the tide and how to estimate the effects of wind driven currents on directions and velocity of tidal currents. These last two calculations are not precise however and should be used with caution.

7. TIDE TABLES, HIGH AND LOW WATER PREDICTIONS, 1979, Department of Commerce, National Oceans & Atmospheric Administration.

These tables issued yearly contain the daily predictions of time and height of the tides above mean low water. Calculations for Revere are based on Boston, Massachusetts. The correction factors for exact times and heights for Lynn Harbor are given on Page 209. There is a section giving a brief general explanation of tides and a section showing how to calculate the height of the tide at any given time.

8. OCEANOGRAPHY, 1972, M. Grant Gross, Englewood Cliffs, New Jersey.

An excellent readable introductory text in oceanography. It covers many important topics including waves, tides, tidal currents, estuaries, coastal oceanography, shoreline processes, ecosystems in coastal environments and biological productivity.

9. WAVES ON BEACHES, 1968, Bascome, W. D.

A general text book, (paperback) which gives a good explanation of waves, tides and tidal hydraulics which effect beaches and harbors. Concepts are presented in a pleasant and non-technical style.

### C. FLOOD HISTORY

10. RESOURCES DEVELOPMENT REPORT ON FLOOD CONTROL AND NAVIGATION, SAUGUS AND PINES RIVER BASIN AND ADJACENT COASTAL AREAS, 1970, Department of The Army, New England Division, Corps of Engineers, Waltham, Massachusetts.

This report considers several flood control measures for both river and tidal floods, and solutions for navigational problems, concluding that none are economically feasible. Thus it recommends no improvement for flood and navigation protection by the U.S. Government. Suggests that floodplain zoning and preservation, public acquisition of low lands and flood insurance programs be established by local interest. It contains a detailed evaluation of physical, economic, and management aspects of floodplains in drainage areas of the Saugus and Pines River, dating back to 1837, including a brief history of the area and the growth of its population and industry. This report does include several good maps outlining flood areas in the Revere area. These maps would be useful in writing an Order of Conditions in this area.

11. THE OCEAN REACH, Digest of a Workshop on Identifying Coastal Flood Hazard Areas and Associated Risks, February 1976, New England River Basin Commission.

A guidebook prepared for a workshop which contains general explanations of how coastal flooding occurs. There is also a general explanation of predictive models to determine extent of future coastal flooding and the impacts of development in coastal hazard area. This report provides a good basic insight into how and where flooding is likely to occur. An understanding of these predictive models would aid in writing an order of conditions for flood prone areas.

12. ENVIRONMENTAL IMPACT ANALYSIS, I-95, 1973, Ecosystems.

Section on ecological impacts Pages 1 and 2 explains the necessity of regulations which provide areas for storage of urban and storm runoff to avoid flood problems. There is an explanation which covers why these marsh areas should not be filled and what the effects are. (Also see Wetland Characteristics and Water Quality).

13. ESTIMATING RUNOFF-THE MODIFIED SOIL COVER COMPLEX METHOD, 1974, USDA Soil Conservation Service, Amherst, Massachusetts.

A good but slightly technical manual which gives a step by step process to derive amounts of water run-off. This manual could serve as a useful approximation of volumes of water associated with non-tidal flood conditions caused by developments, such as subdivisions. Knowing estimates of run-off would aid in writing an Order of Conditions especially when dealing with inland wetland areas.

14. FLOOD PLAIN REGULATIONS FOR FLOOD PLAIN MANAGMENT, 1970

This guide explains when and how regulations should be used for maximum effectiveness in managing flood prone areas, as well as covering the different types of regulations which have proven effective in past case histories. Some of these regulations are zoning, subdivision and building code regulations.

15. WATER AND LAND RELATED RESOURCES OF THE COASTAL REGION, MASSACHUSETTS, 1978, U.S. Department of Agriculture, Soil Conservation Services in Cooperation with Massachusetts Water Resources.

This study of the Coastal areas of Massachusetts was designed to provide data and planning guidelines for water resources in the coastal zone. The 4 study concerns were land use, inland flooding, wetlands, and recreation. Of special interest to conservation commissions is the variety of maps on soil types, wetlands, flood damage and erosion, etc. The objectives of the study area was to develop guidelines for planners based on national economic quality. The planning guidelines are given in chapter 18 and include land use, sediment and erosion, wetlands, water quality, water supply and recreation alternatives.

16. THE BLIZZARD OF 1978, 1979, U.S. Army Corps of Engineers, New England Division, Waltham, Massachusetts.

This report covers the economic effects from the Blizzard of February of 1978. It details costs and losses of residential and commercial property. Cost of debris removal, repair to water control facilities, utilities and road systems are summarized by town.

Losses to property, natural resources areas and indirect expenses incurred are also listed. Also included is a chronological review of how the storm progressed. Tables include measurements of tide evaluations, wind velocity, temperature, and barometric pressure during the storm.

17. HURRICANE SURVEY, MASSACHUSETTS COASTAL AND TIDAL AREAS, 1954, U.S. Army Engineers, New England Division, Waltham, Massachusetts

A slightly outdated report which provides some good historical information such as tide levels and storm tracks of hurricanes which have effected the coastline of Massachusetts. Plate D-4 show the extent of flood prone areas in Revere.

18. REVERE BEACH DEVELOPMENT PROJECT, 1978 Metropolitan District Commission.

This Environmental Impact Statement on the impacts of the proposed development at Revere Beach could be a valuable guide for the Conservation Commission not only in assessing the proposed project but other projects in and around the study area. Section V on the Physical Environment and Appendix D and J, provide valuable information on drainage and flood prone area delineation, historic flood levels and storm events, causes of flooding, and volumes of storm run-off. Appendix D gives the calculations of the amounts of flood storage volume which would be displaced by the project, as well as estimates of increased flooding. Appendix J is an ammendment to Section V on flooding and drainage. This ammendment was necessitated by the February Blizzard of 1978. Figure J-2 is a map of the areas flooded by this storm. This Appendix shows that flooding associated with this storm was caused by wave-over topping of the seawall not storm run-off. Even though the proposed project would have an impact on the area, the developers feel that using substantive mitigating measures the project should be continued. Table 11-2 list a summary of the impacts and mitigating measures.

D. BEACH EROSION

19. BEACH EROSION CONTROL REPORT ON COOPERATIVE STUDY OF REVERE AND NANTASKET BEACHES, 1968, Department of the Army, New England Division, Corps of Engineers, Waltham, Massachusetts.

A review of the coastal environment problems of Revere and Nantasket Beaches vis a vis the restoration, stabilization and protection of the beaches. Includes a study of present morphology and littoral characteristics, and a historical study of the shore changes, including beach accretion and erosion. Presents two plans for improvement using sand fill and emplacement of grain structures and the economic considerations included in each case. The economics are somewhat outdated, (1968).

20. INVESTIGATIONS OF BEACH EROSION PROBLEMS AT REVERE, WINTHROP AND NANTASKET BEACHES, 1970, For Metropolitan District Commission, Hayes Miles.

This technical report covers the beach erosion problem in Revere. Historic erosion rates were calculated and compared to recent (1969) data. From a survey of the beach area, the processes responsible for erosion were defined.



E. WATER QUALITY AND HYDROLOGY

21. BIOLOGICAL AND RECREATIONAL STUDY OF THE PINES RIVER ESTUARY, 1978, City of Revere.

With respect to water quality, there is a good summary of existing water quality data which is related to pollution problems within the Estuary. Several possible sources for pollution are identified. Appendix A explains the importance of different water quality tests and gives a brief guide to the interpretation of these results. There is also a summary of State Water Quality standards and a comparison of these standards to available data.

22. NORTH COASTAL WATER QUALITY DATA AND WASTEWATER DISCHARGE, 1976, Department of Environmental Quality Engineering.

This report provides a listing of chemical analysis of three water sampling stations in the Revere area. Chemical analysis includes dissolved oxygen, biochemical oxygen data, and coliform data. Included also is a listing of the major waste discharges within the Revere area. The report was issued to provide background data on water quality for local planners.

23. AREAWIDE WATER QUALITY ALTERNATIVES, Metropolitan Area Planning Council, 1978, Boston, Massachusetts.

This report covers possible management measures to be used in improving water quality. Environmental topics covered are: explanations of primary and secondary sewage treatment, water conservation, and storm water management techniques. Other topics covered include regulations which would aid in implementation, explanation of federal and state cost sharing for conservation land acquisition, and financial responsibilities of local governments. This report could be a useful guide for planning boards in developing water quality improvement plans.

24. ANALYSIS OF URBAN STORMWATER RUNOFF AND COMBINED SEWER OVERFLOWS IN THE BOSTON METROPOLITAN AREA, 1978, J. M. McGinn, Metropolitan Area Planning Council, Boston, Massachusetts.

This report gives general structural and non-structural solutions for control of storm water run-off

in the Boston area. They also identify recommended solutions for Revere, (Pages 134 and 135).

25. ENVIRONMENTAL IMPACT ASSESSMENT, I-95, 1973, Ecosystems.

Gives 1972 water quality data for Saugus and Pines Rivers. Appendices explain the effects the proposed highway construction will have on marsh plants and water quality. (Also see Wetlands Characteristics, and Flood History).

26. NATIONAL WATER QUALITY INVENTORY, 1976, CONGRESSIONAL REPORT.

This report shows the general water quality trends nationwide. Appendix A Page A-83 is a summary for the state of Massachusetts. This summary shows that a major portion of the Boston Harbor area which includes Revere, does not meet state water quality standards.

F. SOIL TYPES

27. GUIDELINES FOR SOIL AND WATER CONSERVATION IN URBANIZING AREAS OF MASSACHUSETTS, 1975, U.S. Department of Agriculture, Soil Conservation Services, Amherst, Massachusetts.

A technical publication dealing in soil erosion and protective measures to minimize erosion effects. This manual does not cover beach erosion. However, it may be of assistance in solving erosion problems in stream and river banks.

G. PLANNING

28. COASTAL ZONE MANAGEMENT, 1976, Focus on New England, An Annotated Bibliography, M.I.T. Sea Grant #MITSG 75-21, Passero B. and Seaes, M. J.

A bibliography with annotated selections, presents the major sources for pertinent information, on coastal zone management in the New England region.

29. OPEN SPACE AND RECREATION PROGRAM FOR METROPOLITAN BOSTON, Vol. 4., Massachusetts Open Space Law, 1972 Supplement.

This report gives detailed explanations of the laws governing inland and coastal wetlands, a brief review of their history and guides to their implementation. It is to some extent outdated, as many of these laws have been expanded and revised. Especially Section 131 Chapter 40 and 40A. Other important legislation covered is: The Conservation Restriction Act, legislation pertaining to solid waste disposal, tax assessments of open space land, land acquisition programs, environmental rights, water pollution programs and the National Environmental Policy Act.

30. SECTION 131 CHAPTER 40, MASSACHUSETTS GENERAL LAWS, Department of Environmental Quality Engineering and Executive Office of Environmental Affairs.

This is the "Wetlands Protection Act", which governs alteration of wetland areas in the Commonwealth of Massachusetts. These regulations specifically define eleven resource areas to be protected as wetlands, and defines their boundaries. The act clearly details what is defined as an alteration to a wetland. Also covered is how the act is to be enforced and how to write an Order of Conditions.

31. COASTAL ECOSYSTEMS MANAGEMENT, 1977, Clark, J., Wiley Interscience,

This book analyzes coastal environments, and identifies conflicts between development and conservation. Using a detailed management plan, solutions to these conflicts are given. The text also includes several appendices with technical data and literature references. The management plan deals with individual activities such as dredging or marina construction and explains how to minimize impacts of the activity. This would be an excellent reference for a Conservation Commission.

32. COASTAL RESOURCES ATLAS, Commonwealth of Massachusetts, Coastal Zone Management, Vol., II. Chapter 5: Pages 37 & 38.

This Atlas provides Area Maps for the Massachusetts Coastal Zone showing wetlands areas, marshes, barrier beaches, coastal banks, etc. The general limit of 100 year flood plain is also shown. Discussions include area planning objectives and areas of special designations, such as ports, and areas of critical environmental concern.

33. A GUIDE TO THE COASTAL WETLANDS REGULATIONS OF MASSACHUSETTS W.P.A. - G.L. 131, S. 40.

This guide clearly explains the Wetland Protection Act. It gives concise descriptions of the physical areas covered by the act, and descriptions of activities which are regulated under the act. The guide book also covers how to identify adverse impact, measures to meet performance standards, and how to prepare an Order of Conditions. There is a substantial discussion of the regulations within the act, s. 24. There are also several appendices, one of which is a good general overview of the physical and biological

processes affecting wetland areas. This guide was written for Conservation Commissions to aid them in interpreting the Wetlands regulations, and writing Orders of Conditions.

34. ENVIRONMENTAL PROGRAM MANUAL (conference material for "Surviving Environmental Programs"). May, 1977, Massachusetts League of Cities and Towns.

A manual containing summaries of what the different environmental programs in Massachusetts are: which state and federal agencies are responsible for implementation and where to get additional information on a specific program.

35. MASSACHUSETTS OUTDOOR STATEWIDE COMPREHENSIVE OUTDOOR RECREATION PLAN, Department of Environmental Management.

This report was intended to improve the management of open space and outdoor recreation. It explains, by region within the state, what the supply and demand and future planning for outdoor recreation is. Section 3-Pages 18-30 covers the general environmental and socio-economic settings within the state.

#### H. MANAGEMENT

36. INTERIM REPORT LYNN HARBOR DEVELOPMENT, 1976, Massachusetts Institute of Technology.

This report is a preliminary working document to be used towards formulation of a public policy for Lynn Harbor development. It examines present (Sept. 1976) conditions and provides alternatives for long-term planning in order to revamp Lynn Harbor's lost status as a leading community. It contains an annotated bibliography of the area.

37. CONSERVATION COMMISSIONS IN MASSACHUSETTS, THEIR FUTURE. An Executive Summary, 1977, Executive Office of Environmental Affairs.

A brief but concise summary of the role local Conservation Commissions play in implementation of environmental regulations and planning. This report also includes the history of Conservation Commissions in Massachusetts.

38. COASTAL ZONE MANAGEMENT, March, 1977.

This report is a detailed explanation of the Coastal Zone Management Policies in the Commonwealth of Massachusetts. These policies are based on existing legislation and cover several general areas. These areas are: The Marine Environment Coastal Hazards, Visual Environments, Ports and Harbors, Recreation, Energy and General Development, and Public Investment. Definition of the coastal zone and all related areas are detailed, as well as major activities which impact the coastal zone. Of major importance to Revere is the section on Coastal Hazards. The Coastal Hazards section explains the natural processes involved in flooding and erosion of coastal areas, and the adverse effects of development in these areas.

39. COMMONWEALTH OF MASSACHUSETTS COASTAL ZONE MANAGEMENT DRAFT ENVIRONMENTAL IMPACT STATEMENT, 1977.

This is the draft assessment of the impacts which would occur to the physical and socio-economic environment in Massachusetts, with the implementation of Coastal Zone Management.

40. WRITTEN COMMENTS ON COASTAL ZONE MANAGEMENT-DRAFT ENVIRONMENTAL  
IMPACT STATEMENT, 1978.

This document contains the comments of federal and non-federal agencies who reviewed the "Commonwealth of Massachusetts Coastal Zone Management- Draft Environmental Impact Statement".

41. COASTAL ZONE MANAGEMENT PROGRAM AND FINAL ENVIRONMENTAL IMPACT  
STATEMENT, 1978.

This is the coastal zone management program that is in effect in the Commonwealth of Massachusetts and the final assessment of the impacts which will occur to the physical and socio-economic environment in Massachusetts due to the implementation of the Coastal Zone Management Plan. It is based on the original plan and impact statements, which were modified where necessary to be consistent with other existing coastal zone policies, as determined by the written comments received in the review process.



## Environmental Assessment

## INTRODUCTION

The environmental resources of the city of Revere play an important role in the city's welfare and development.

This paper will inventory the coastal resource areas as defined by the Wetlands Protection Act, within the city. An assesment of the impacts future development may have on these areas will then be made, based on the seven significant interests protected under the Act. After this assessment, recommendations for futher studies will be made.

The Wetlands Protection Act protects seven resource areas in the coastal zone; These areas are:

1. Land under the oceans
2. Coastal beaches-including tidal flats
3. Salt marshes
4. Rocky intertidal shores
5. Land under Salt Ponds
6. Anadromus/Catadramus Fish runs
7. Barrier Beaches

Of these seven resource areas the City of Revere has four within its boundaries. These are: Lands under the oceans; coastal beaches, barrier beaches and salt marshes.

The significant interest to be protected under the act are;

1. land containing shellfish
2. fisheries
3. pollution
4. storm damage prevention
5. flood control
6. ground water supply
7. public or private water supply

### LAND UNDER THE OCEANS

"Land under the oceans means land extending from mean low water line seaward to the boundary of the municipality's jurisdiction." (33)

This land includes land under bays, estuaries, and portions of rivers which are tidally influenced.

Areas of Revere which are considered "Land Under the Oceans" are shown in Figure 1. These areas have specific set of ocenographic processes acting upon them. These process are: waves, nearshore currents, tides, and tidal currents. As waves from deep water move towards the coast they begin to shoal or feel the bottom. When the water depth becomes shallow enough these waves become unstable and break. The direction and magnitude of these waves is dependent upon wind conditions and bottom topography.

For a given bottom topography waves are bent or refracted around so the wave front becomes parallel to the bottom contour. This causes a divergence of the wave crests in some areas reducing the wave height and a convergence of wave crests in other areas, increasing the wave height.

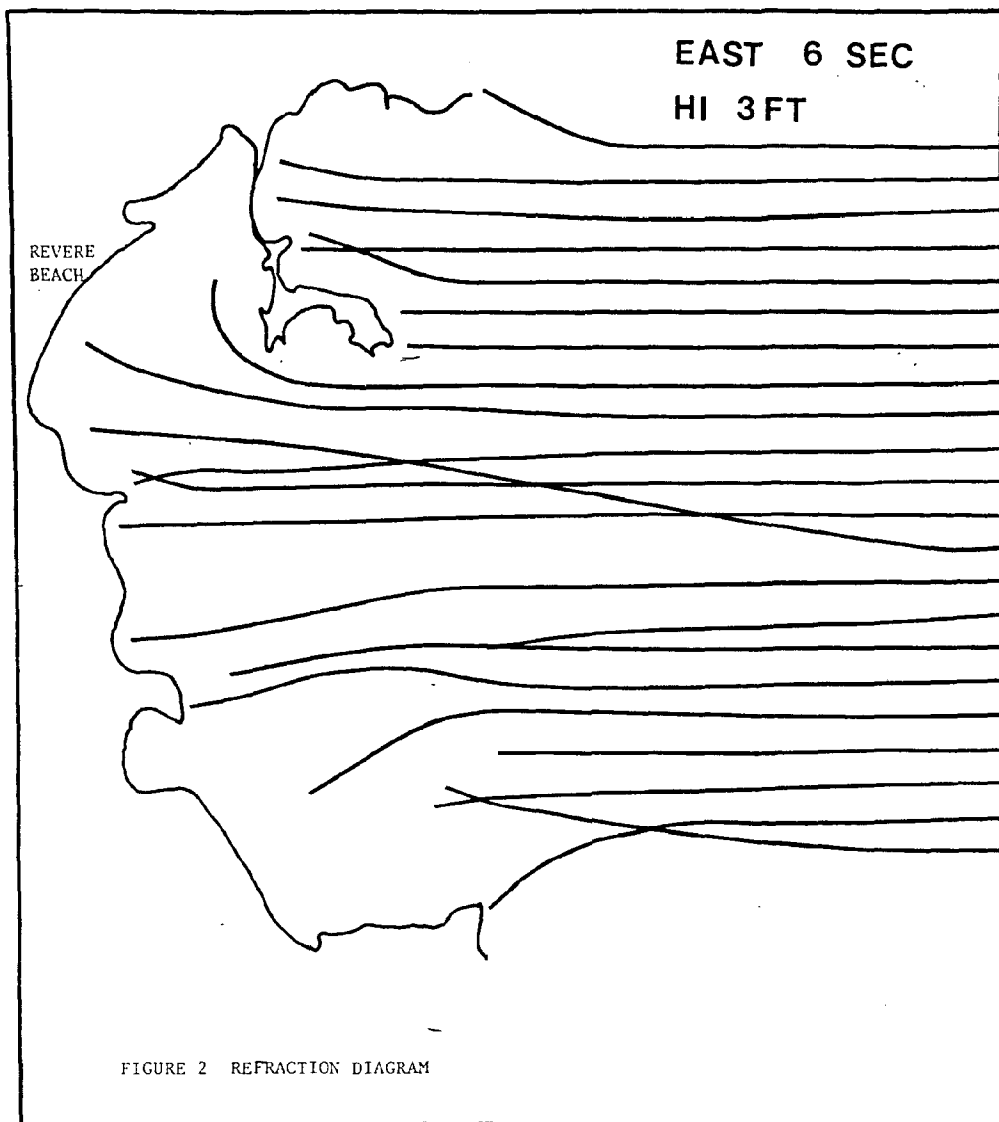
Figures 2 and 3 are diagrams of how waves are refracted at Revere Beach. These diagrams show that when waves approach the shoreline of Revere from the northeast and east they diverge between Nahant and Winthrop causing decreased wave heights along Revere Beach.

With the breaking of incoming waves longshore currents are generated. Estimates of longshore currents in the area vary from 5cm/sec to 20cm/sec, generally in a southerly direction (19).

Tide elevations play an important role in how these waves effect the shoreline. As tides rise and fall the effective depth of the water changes accordingly. When this happens the position of the breaking wave moves horizontally, dependent upon the tide range. The tide ranges in Revere are 9.2 feet with a 10.7 foot spring range. These ranges are the difference in height between mean high water and mean low water. The spring range is the average semi-diurnal range which is a result of the moon being new or full (7).

Storm conditions develop waves which effect, to some extent or another, all of the coastal resource areas. Frequencies and heights of storms effecting Revere are listed in Table 1.

For the Revere area the 100 year storm tide elevation is 11 feet MSL. The 50 year storm tide elevation is approximately 10.4 feet, or the Blizzard of 1978 storm. Storms with tide elevations greater than 8.0 feet occur approximately every 8 years.



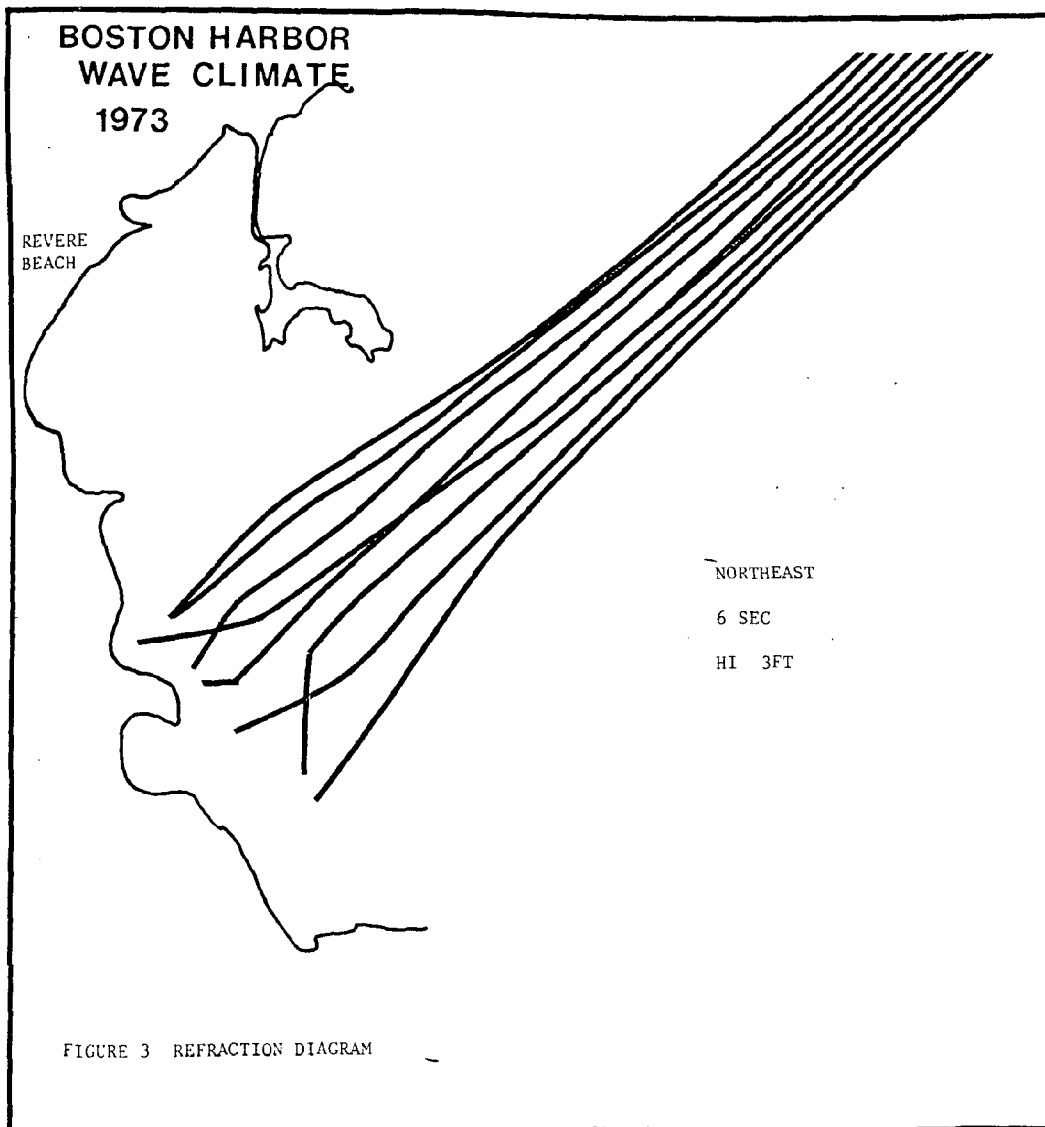


TABLE I

MAJOR STORMS OF NEW ENGLAND

<u>DATE</u>	<u>PRECIPITATION</u>	<u>WIND</u>	<u>TYPE OF STORM</u>	<u>TIDE ELEVATION</u>
11/27/89	8-10S 1.05R	60 mph	northeaster	10.1MSL
12/26/99	11"S 1.7"R	45 mph	"	10.6MSL
3/4/31	-	45 mph	"	9.2MSL
10/23/53	2.4"R (in 24 hrs)	-	hurricane	8.2MSL
8/31/54	2.6"R (in 24 hrs)	40 mph	hurricane	8.4MSL
8/18/55	18-4.88"R 19-7.06"R		hurricane	8.0MSL
4/7/58	1.60"R	40 mph	northeaster	9.4MSL
12/29/59	3.5"S 1.6"R	40 mph	northeaster	9.4MSL
3/7/62	-	40 mph	northeaster	8.4MSL
2/19/72	2.4"P 6"S	40 mph	northeaster	9.1MSL
2/6-7/78	27"S	69mph	northeaster	10.4MSL

#### COASTAL BEACHES, BARRIER BEACHES AND TIDAL FLATS

"Coastal Beach means unconsolidated sediment subject to wave, tidal and coastal storm action which forms the gently sloping shore of a body of salt water and includes tidal flats." (33). Coastal Beaches extend from the mean low water line landward to a dune, bank, or man-made structure, whichever is closest to the ocean. "Barrier Beaches are narrow low-lying areas of land generally consisting of coastal beaches and dunes extending roughly parallel to the trend of the coast. It is separated from the mainland by a narrow body of fresh, brackish, or saline water or a marsh system." (33). Tidal flats are a nearly level part of the beach, commonly found along shorelines and estuaries with large tidal ranges. The size of the material composing a tidal flat is generally smaller than that of material composing a beach.

Areas in Revere which are considered coastal beaches and barrier beaches are shown in figure 1. These areas play an important role in storm damage prevention and flood control because of the physical processes which effect them. Since these areas are the first line of defence against storms it is important to understand how waves and storms affect beach areas.

Waves breaking on beach areas move sand back and forth and along beach areas. During storms the sediment on the beach moves offshore, changing the shape of the beach. This changed beach shape then acts to reduce the energy (hence the damage) an incoming wave has.

However, when these beach areas are starved of sediment because of man made structures built to prevent erosion and reduce storm damage, the beach shape can not change enough to effectively decrease the wave energy. In Revere at least 90% of the coastal beaches are backed by seawalls. These structures have two major effects on the beach. First these seawalls decrease the ability of the beach to act as a natural buffer by decreasing the sediment supply to the area. When this occurs the offshore bar which normally develops during a storm is not developed, and therefore, storm waves do not break further from the beach during the storm. Secondly when waves hit the seawall their energy is reflected back out towards the incoming wave. When these two waves interact the resultant wave is heigher. This causes more energy in the area of the breaking waves, which causes increased erosion.

Historic Shore Line Changes, figure 4, shows both recession and accretion of the beach areas in Revere, (19). The Army Corps of Engineers in 1968 reported accretion along the Saugus River, and periods of both erosion and accretion along the southerly portion of the Point of Pines Beach. Moving south along the beach, the areas with substantial development show erosion of up to 6.8 feet/year from 1945 to 1962. Moving even further south the beach area is accreting. Sediment movement in the area is predominantly offshore and onshore with longshore transport being almost zero (20). This may be due to the number of seawalls along the beach, which decreases the sediment supply.

Figure 4 Historical  
Shoreline Changes

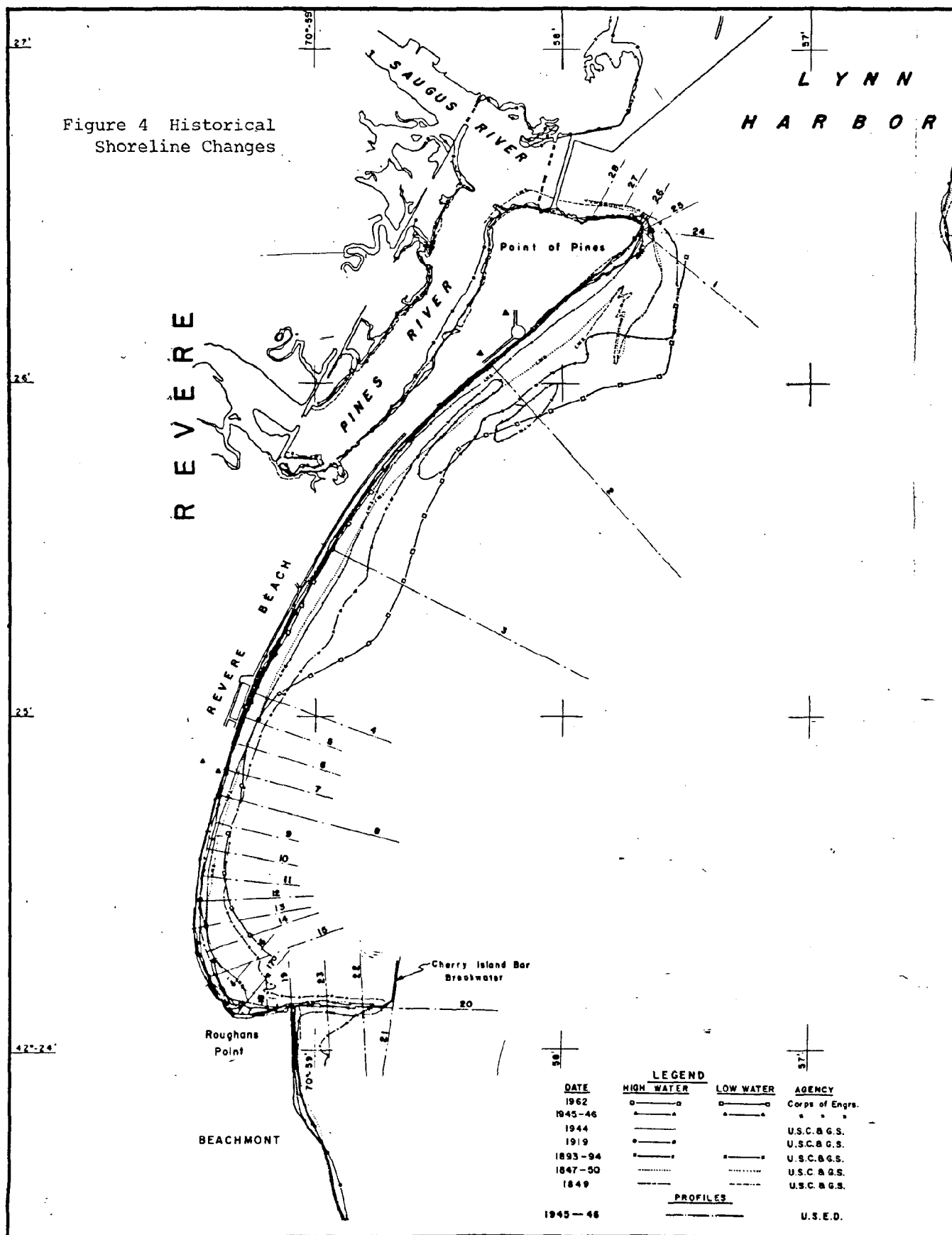




TABLE 2

VOLUMETRIC CHANGES-SANDFILL-REVERE BEACH

LOCATION Profile No.	PERIODS OF RECORD TOTAL CHANGE IN CUBIC YARDS					
	1900-1904	1904-1910	1910-1946	1946-1962	1900-1946	1900-1962
1 - 2	Unknown	Unknown	Unknown	+ 70,000	Unknown	Unknown
2 - 3	- 74,700	- 53,400	+ 39,000	+ 83,500	- 89,100	- 5,600
3 - 4	- 1,900	- 28,600	+ 6,600	+ 13,500	- 23,900	- 10,400
4 - 6	+ 3,600	- 7,700	- 15,300	- 7,000	- 19,400	- 26,400
6 - 8	+ 3,500	- 10,300	- 9,900	+ 2,000	- 16,700	- 14,700
8 - 10	+ 4,800	- 23,500	+ 6,400	+ 4,000	- 12,300	- 8,300
10 - 12	+ 3,100	- 10,200	- 1,600	+ 4,000	- 8,700	- 4,700
12 - 14	+ 1,200	+ 13,200	+ 12,500	+ 28,000	+ 26,900	+ 54,900
14 - 15	<u>+ 1,500</u>	<u>+ 15,400</u>	<u>+ 16,300</u>	<u>+ 21,500</u>	<u>+ 33,200</u>	<u>+ 54,700</u>
(1)	- 58,900	- 105,100	+ 54,000	+ 149,500	(2) - 110,000	(2) + 39,500

(1) Summation of Profiles 2 - 15

(2) Periods 1946 - 1962 and 1900 - 1962 reflect sandfill placed by Commonwealth of Massachusetts in 1954 in partial compliance with authorized project.

Comparisons of various beach profiles (Table 2) show the total beach changes in the area, (19). However, some of the accretion is the effects of sandfill placed by the Commonwealth of Massachusetts in 1954.

Presently there are several plans for further beach nourishment of the area. Even though this will not stop the erosion process, it is an environmentally effective method of beach improvement and should be implemented.

When reviewing projects along the beach areas in Revere measures to lessen the erosional impacts of coastal structures should be taken. These can include:

1. any new seawall constructed should have sufficient slope to help dissipate wave energy. A maximum acceptable slope of 1.3 has been suggested (33).
2. structures should be rough not smooth. This dissipates more energy as the water runs up the structures.
3. structural protection should be accompanied by suitable beach nourishment programs. It is possible that with the implementation of beach nourishment the need for structural protection can be minimized or entirely eliminated (33).

#### SALT MARSHES

"Salt Marshes means a coastal wetland that extends landward up to the highest high tide line, that is, the highest spring tide of the year and is characterized by plants that are well adapted to, or prefer living in, saline soils. Dominant plants within salt marshes are salt meadow cord grass (*Spartina patens*) and/or salt marsh cord grass (*Spartina alterniflora*). A salt marsh may contain tidal creeks, ditches and pools. Table 3 lists the common salt marsh plants which may be used as indicators species of a salt marsh, (33)

Table 3-SALT MARSH PLANTS

1. Salt Marsh Cord Grass
2. Salt Meadow Grass
3. Spikegrass
4. Blackgrass
5. Marsh elder
6. Glass worts

7. Sea Lavender
8. Sea Blite
9. Sperscal
10. Salt Marsh Aster
11. Little Sea - Pink

The approximately 820 acres of salt marsh within the boundaries of Revere are the most important resource area in the city (figure 1).

The Marsh is the major drainage basin for the region and drains a watershed of many acres. The Marsh is also a key link in the biological food chain, and aids to a great extent as a natural sewage treatment plant.

Marsh areas can be divided into high marsh and low marsh depending upon the vegetation and frequency of tidal inundation. The high marsh area is dominated by *Spartina Patens* and is located so that it is only inundated by water during spring tides or during flood conditions. Low marsh areas are dominated by *Spartina Alteniflora* and are inundated daily. Landward of the marsh the vegetation grades back into typical upland plants. Figure 5 shows the typical types of vegetation in upland marsh areas (31).

Of the two typical marsh plants, *Spartina Alterniflora* is the more productive. This plant is abundant in young marsh areas, where as in old marsh areas *Patens* and upland vegetation is more common. Upland vegetation encroaching upon the marsh is a natural occurrence called succession. Succession of the marsh decreases the productivity of the marsh by decreasing the density of the most productive marsh plants. When filling is allowed succession occurs more rapidly, hence decreasing the overall productivity. If filling of the marsh is allowed or done illegally, replacement of the area with *Alterniflora* marsh grasses is highly recommended.

It is recognized that marsh plants act as sewage filter systems, uptaking pollutants into their plant tissues. However, little is known about the amounts of pollutants marsh grasses can assimilate and still remain productive. For this reason, any plans of utilizing marsh areas as sewage treatment facilities should be prohibited.

#### LAND CONTAINING SHELLFISH AND FISHERIES

Land containing shellfish in Revere is shown on figure 6. The most common shellfish in the area are soft shell clams and mussels (4). However, these shellfish beds are closed to all because of pollution.

The Pines River supports a reasonable number of finfish species. Data collected in 1968 and 1969 is given in Table 4. Future impacts of fisheries on the Revere area has not, to date, been assessed. However, it is expected that for all coastal communities fisheries will

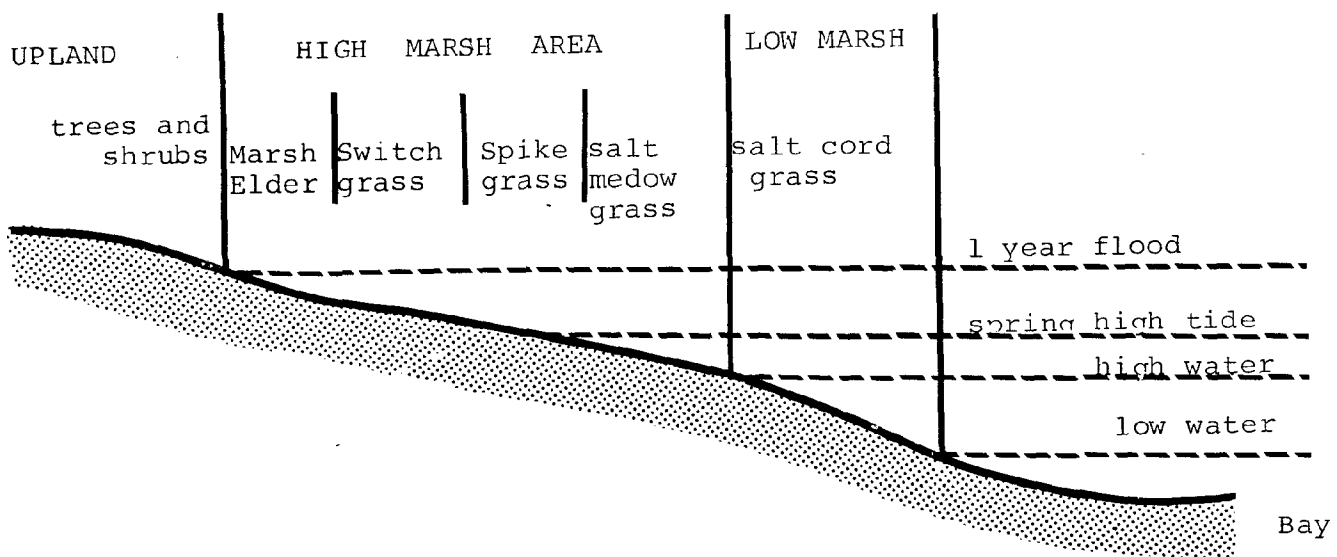
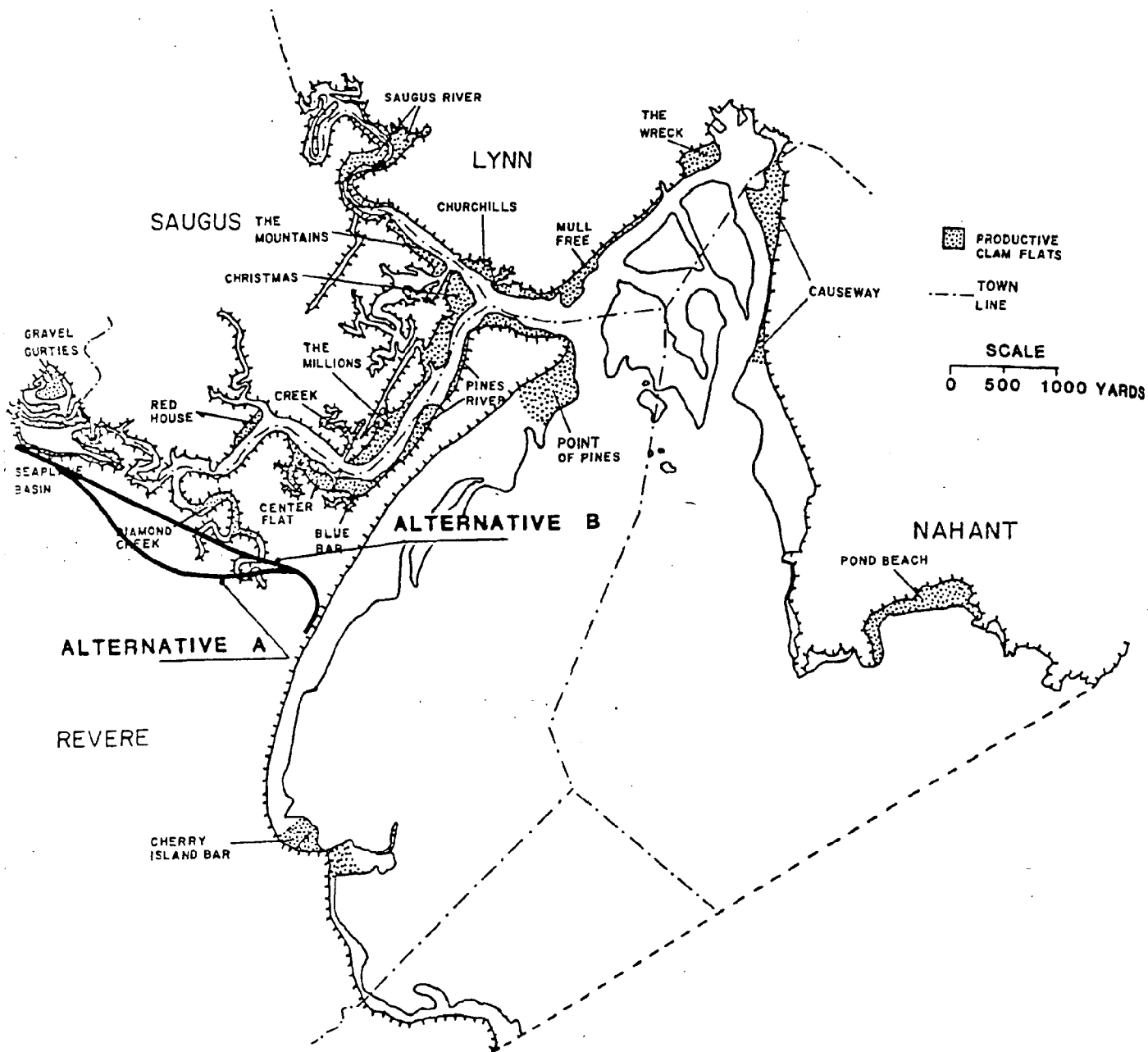


FIGURE 5 MARSH VEGETATION



**FIGURE 6**

Location of the productive soft shell clam habitat  
in Lynn-Saugus Harbor, 1968-1969.

SOURCE: A.P. CHESMORE ET AL., A STUDY OF THE MARINE RESOURCES OF LYNN - SAUGUS HARBOR, 1972.

U.S. DOT, FHWA, MDPW, Draft Environmental Impact Statement Section 4 (F)  
Revere Beach Connector, 1979.

have a vital role both economically and environmentally. Because of this all fisheries should be protected regardless of their existing size and condition. The most important way to protect fisheries and shellfish, however, is to improve water quality by decreasing pollutant levels.

TABLE 4

SHELLFISH AND FINFISH FOUND IN REVERE

<u>Shellfish Species</u> <u>(Common Name)</u>	<u>Finfish Species</u> <u>(Common Name)</u>
Blue Mussel	American Eel
Tellin Shell	Atlantic Tomcod
Duck Clam	Fourspine Stickleback
Moon Snail	Grubby
Blood Worm	Little or Winter Skate
Ribbon Worms	Northern Pipefish
	Red Hake
	Shorthorn Sculpin
	Threespine Stickleback
	Winter Flounder
	Atlantic Mackerel
	Longhorn Sculpin
	Ocean Pout
	Rainbow Smelt
	Hake
	Yellowtail Flounder

POLLUTION (WATER QUALITY)

Figure 7 and Table 5 show water quality data for the Pines River. These tables and previous studies (21, 22) show that the water quality in the City of REvere is poor. Other state sources indicate the water quality in the Pines River to be class SB as defined by the State Water Quality Standards (Table 6). If the water quality was class SB the area would be acceptable for propagation of fish, other aquatic life and wildlife, for primary and secondary contact recreation (including swimming) and for shellfish harvesting with depuration (Restricted Shellfish Areas).

However a comparison of the water quality data indicates pollutants in excess of class SB standards. The identified sources of this pollution are landfill sites in the area, storm water and urban runoff and sewer overflow.

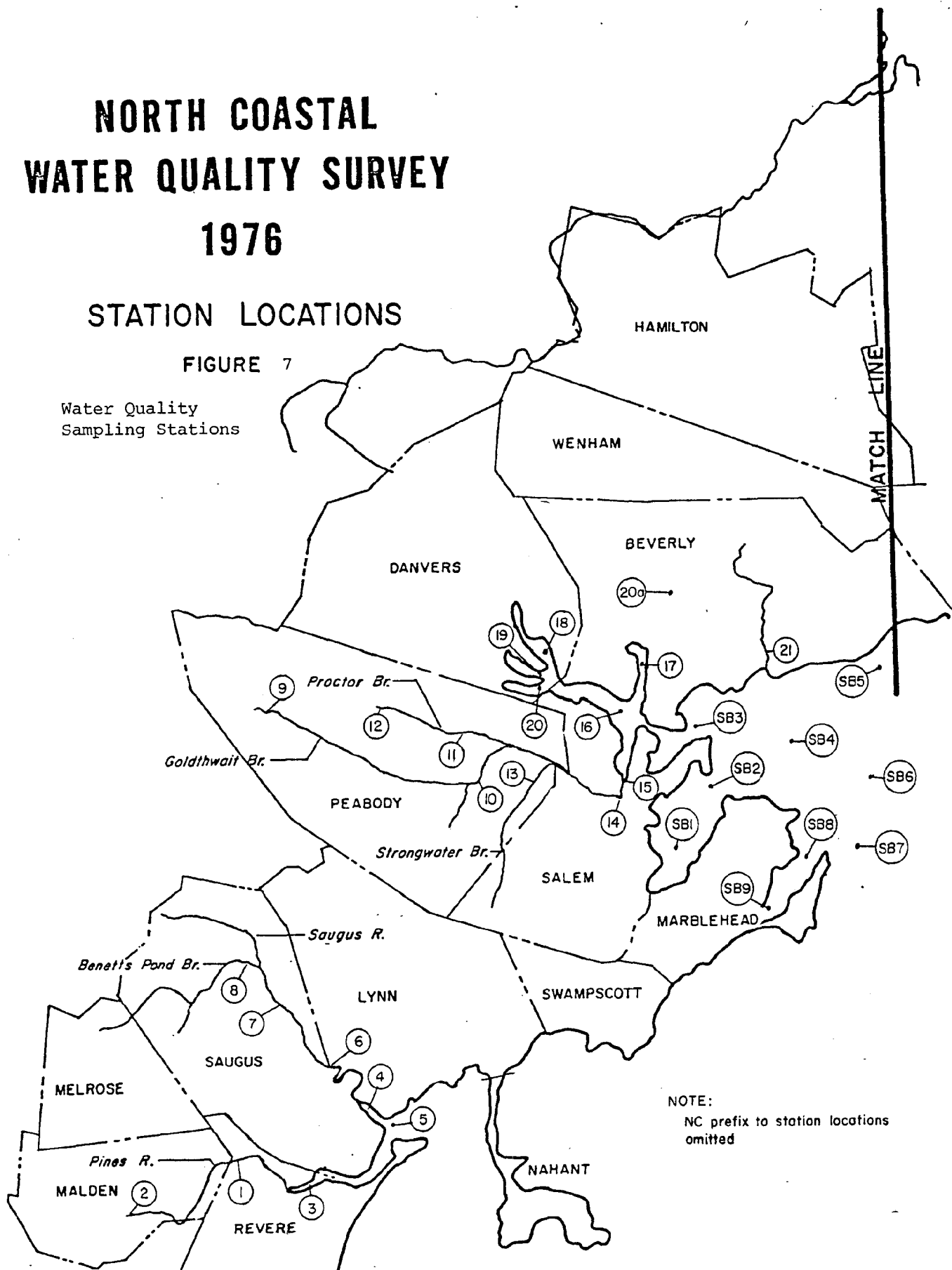
Some of the ways these sources of pollution can be controlled to at least some extent, is for the Conservation Commission's Orders

# NORTH COASTAL WATER QUALITY SURVEY 1976

## STATION LOCATIONS

FIGURE 7

Water Quality  
Sampling Stations



NOTE:  
NC prefix to station locations  
omitted

of Condition to minimize runoff into marsh areas. This can be accomplished by limiting the amount of impervious material included with construction. In areas where runoff is inevitable, traps or filters for oil and grease and sludge would slow the rates of pollution into the area. The traps must be cleaned periodically to remain effective.

TABLE 5

SUMMARY OF DWPC 1976 WATER QUALITY SURVEY DATA (3)  
Station NC4 - Saugus River, Route 107

<u>Parameter</u>	<u>6/15</u>	<u>6/16</u>	<u>6/17</u>
Temperature (°F)	68	74	72
Dissolved Oxygen	6.6	5.4	5.0
BOD <sub>5</sub>	1.8		2.4
pH	7.9		7.6
Alkalinity	110	-	108
Suspended Solids	10		7.5
Ammonia Nitrogen	.20		.33
Nitrate Nitrogen	.00		.00
Total Phosphorous	.09		.15
Total Coliform*	4,300		43,000
Fecal Coliform*	750		15,000
Turbidity	2		3
Color (std. units)	15		15
Chlorides	16,250		14,250
Total Solids	29,380		30,280

All values expressed as mg/l unless otherwise indicated

\*Colonies per 100ml



TABLE 5  
(continued)

SUMMARY OF DWPC 1976 WATER QUALITY SURVEY DATA (3)

Station NC5-Confluence, Saugus-Pines River, Route 1A

<u>Parameter</u>	<u>6/15</u>	<u>6/16</u>	<u>6/17</u>
Temperature (°F)	62	68	70
Dissolved Oxygen	7.7	6.4	5.8
BOD <sub>5</sub>	2.4		2.6
pH	8.1		7.7
Alkalinity	110		112
Suspended Solids	11		10
Amonia Nitrogen	0.14		0.24
Nitrate Nitrogen	0.0		0.0
Total Phosphorous	0.07		0.07
Total Coliform *	36		24,000
Fecal Coliform*	36		230
Turbidity (JTU)	1		2
Color (std. units)	10		10
Chlorides	16,500		16,500
Total Solids	32,020		33,580

All values expressed as mg/l unless otherwise indicated

\*Colonies per 100 ml.

TABLE 5  
(continued)  
SUMMARY OF DWPC 1976 WATER QUALITY SURVEY DATA (3)  
Station NC3 - Pines River, Route 107

<u>Parameter</u>	<u>6/15</u>	<u>6/16</u>	<u>6/17</u>
Temperature (°F)	66	71	70
Dissolved Oxygen	6.7	5.8	6.3
BOD <sub>5</sub>	2.4		1.8
pH	7.9		7.7
Alkalinity	112		110
Suspended Solids	10		17
Ammonia Nitrogen	0.23		0.25
Nitrate Nitrogen	0.0		0.00
Total Phosphorous	.17		0.05
Total Coliform *	91		430
Fecal Coliform *	36		91
Turbidity (JTU)	2		3
Color (std. units)	15		20
Chlorides	17,000		15,250
Total Solids	31,600		33,250

All values expressed as mg/l unless otherwise indicated

\* Colonies per 100ml

TABLE 6

SUMMARY OF MASSACHUSETTS WATER QUALITY STANDARDS  
FOR  
CLASS SB WATER (4)

<u>Parameter</u>	<u>Criteria</u>
Dissolved Oxygen	6.0 mg/l minimum
Temperature	none except where the increase will not exceed the recommended limits on the most sensitive water use
pH	shall be in the range of 6.5 - 8.5 and not more than 0.2 units outside of the naturally occurring range
Total Coliform	shall not exceed a median of 700 MPN per 100 ml and not more than 20% of the samples shall exceed 1,000 MPN per 100 ml
Alkalinity	20 mg/l or more as $\text{Ca CO}_3$
Suspended Solids	no criteria recommended
Ammonia Nitrogen	0.02 mg/l
Nitrate Nitrogen	no criteria recommended
Total Phosphorus	0.10 ug/l
Turbidity	no criteria recommended
Color	no criteria "
Chlorides	no criteria "
Total Solids	no criteria "
Pesticides	
Dieldrin DDE-DDD	0.003 ug/l*
DDT	0.001 ug/l*
Lidane	0.004 ug/l*
Heptachlor	0.001 ug/l*
Heptachlor Epoxide	0.001 ug/l*

\* ug/l - micrograms per liter ( $\text{mg}/10^{-3}$ ); also expressed as parts per billion (ppb)

mg/l - milligrams per liter; also expressed as parts per million (ppm)

## FLOOD CONTROL

The areas of REVERE which are flood prone are shown in Section 5 of this report. Flood problems can be divided into two types: (1.) those caused by precipitation and (2) those caused by tidal action. In Revere the worst floods records are part of a complex interaction of these two.

There are several factors which intensify flood problems. These are infiltration, storage capacity, drainage pattern, and runoff rate. The infiltration of water into a soil is dependent upon the permeability of the soil. When areas are paved over the infiltration is decreased, which in turn causes more water flowing faster to enter the basin. The storage capacity of the area is the volume of land available to hold water. Any time part of a drainage basin is filled this volume is decreased. This in turn causes the elevation of the water in other areas within the basin to increase.

Storage capacity is only effected by flooding caused by precipitation. Tidally induced flooding is theoretically based only on water elevation not volume of water. Since water seeks its own level regardless of the volume of the basin, filling or dredging of an area will not change the tidal or storm water elevation. However, filling of an area may change the basin configuration which could change the tidal characteristics within the basin. Also, little information is available on how tidal flooding and flooding caused by precipitation interact in an area such as the Saugus Salt Marsh.

In dealing with estuarine flood problems the type of drainage pattern plays an important role in flooding. If the areas are fed by dendritic drainage pattern the basin will be associated with sharp-high magnitude flood peaks at the basin outlet. With an area of trellised drainage, flooding will be less.

The Saugus Marsh system is the main drainage basin for the city of Revere. Therefore all possible measures to mitigate flood problems should be taken. Measures that can be incorporated in an order of conditions could be:

1. Any filling in the area should be prohibited.
2. If filling of an inland wetland is allowed compensatory flood storage should be provided. (Inland Wetlands only)
3. Pavement in and around the area should be kept to a minimum. Driveways associated with residential development should be gravel instead of hot top.
4. Adequate drainage must be provided.

5. Drainage systems should be designed so that they do not all drain into one area immediately. They should be dispersed over the largest area possible.

#### STORM DAMAGE PREVENTION

The Blizzard of February 6, 7, 1978 wrought considerable damage upon the City of Revere. This storm, however, was not the 100 year storm but the 50 year storm. This means that a storm of this magnitude has a 5% chance of occurring in any given year.

The major problem associated with the storm was extreme flood conditions which occurred throughout the City. The areas flooded during the storm are shown in Section 5.

The damage resulting from this flooding resulted from storm surges of 4.5 feet flooding the marsh area and at the same time overtopping the seawall. The total volume of flood water which filled the County Drainage Ditch area was 430 acre feet. This was caused entirely by overtopping of the seawall in front of Revere Beach Boulevard.

It has been proposed (18) that one of three measures could be taken to alleviate this problem. These measures are:

1. a higher seawall could be build
2. a sloping rip rap revetment could be built
3. beach nourishment

Of these three, only beach nourishment is totally environmentally acceptable.

However, this would only prevent flooding which occurs from wave overtopping. Flooding will still occur from precipitation and tidal water input through the marsh.

#### CONCLUSIONS AND DEVELOPMENT IMPACTS

Although there is only limited possibilities of developing the "land under the ocean" or the "coastal beaches", activities such as reconstruction of the seawall along the Boulevard will impact these resource areas. As discussed earlier these activities would effect the storm damage prevention function of the area by altering wave characteristics. However, development in other areas of the City can contribute to the degradation of water quality, pollution of shellfish beds and flood control, through inadequate drainage and sewage systems. The need to upgrade these systems will be discussed in other sections of this report.

The most critical area of concern is the Saugus Salt Marsh. Because the marsh is the only remaining open space within the City the development pressures are considerable. However, the marsh area can

not be developed without filling, which falls under the jurisdiction of the Conservation Commission. It is the Commission's responsibility to write and Order of Conditions which would have no adverse impact on the area.

For an area of the marsh which is totally composed of marsh grasses, section 32 (3) of the Wetlands Protection Act prohibits any filling of the area. However lots that border on upland areas could be considered for development with a stringent order of conditions.

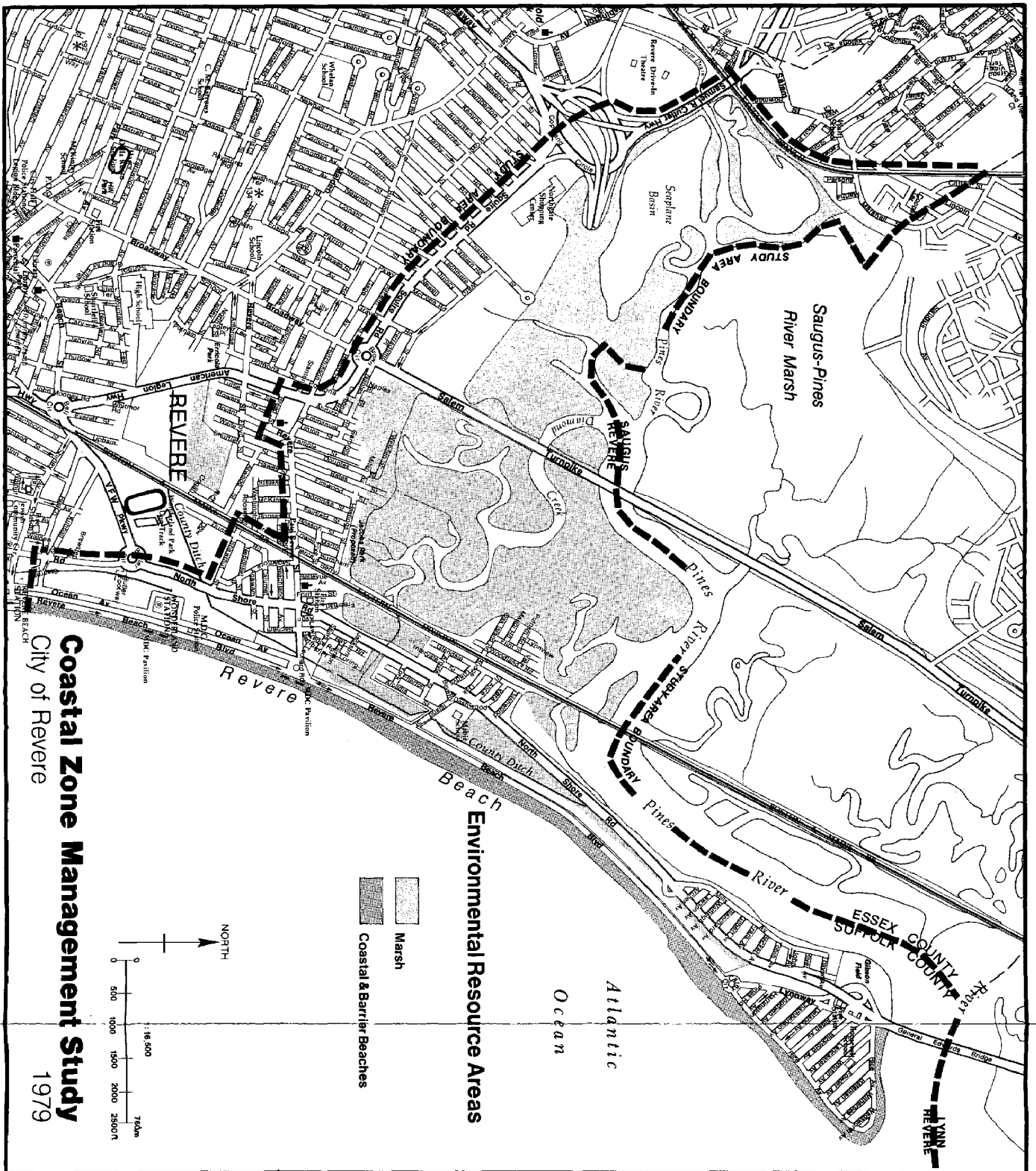
Orders of Conditions for these areas must meet the requirements of no adverse impact. Some possible ways this can be accomplished are:

1. the total acreage of marsh should remain constant. If a marsh area is filled another upland area should be removed and be created into a marsh.
2. additional water runoff into the marsh and the rate of this runoff should be minimized, through the use of pervious materials and/or catch basins.
3. stringnet pollution controls such as oil traps and filters should be manditory.
4. Any structure built in the flood plain should be built to HUD specifications.

This report contains only a few of the possible measures that can be taken to condition development so that there is no adverse impact on the environment. A review of the bibliography would provide even more. It must be remembered that it is important that any order of conditions should insure that a development has no adverse impact upon the seven interests to be protected under the act.

#### RECOMMENDATIONS

There are several areas of environmental importance to the city of Revere where knowledge is either deficient or absent. The largest environmental resource the city has also has the least known about it, that is the marsh area. It is suggested that a study of tidal characteristics, and circulation patterns be undertaken to fully assess the hydraulics of the marsh estuary system. It is also recommended that mapping and studies of the marsh areas be undertaken to determine the marshes productivity and effects pollutants are having on the marsh system.





SECTION TWO

Land Use Policy Development

## Existing Conditions and Development Policies

## Introduction

The Coastal Zone Management Study Area is located in the northern half of the City, generally including all land north of Squire Road, the American Legion Highway and Revere Street. The Revere Beach Development Area east of the B & M right-of-way and north of Beach Street is also included as part of the Study Area. Over half of the area is saltwater wetlands, the Saugus Marsh. The pattern of development within the Study Area is widely varied. In the western portion of the Study Area are highway commercial and high density residential developments. The remaining area is lower density neighborhoods of single to four unit structures with interspersed neighborhood businesses.

This section of the Coastal Zone Management Report examines existing conditions and perceived development policy, and constraints and pressures for new development within the Study Area. Perceived policy, constraints, and pressures were formulated as a result of interviews held with key City Officials such as City Councilors, the Mayor, the City Clerk, City Solicitor, City Planner, City Assessors the Building Inspector and others. Opinions of citizens participating in the Coastal Zone Management Study were also incorporated into these policies.

The first part of this section is a brief discussion of the City's historical development policies and a presentation of the current administration's overall development policies. However, for a more specific analysis of the Study Area, it was necessary to divide the larger area into fourteen sub-areas which generally follow boundaries of existing neighborhoods or natural features. This discussion of policies and constraints for each of the sub-areas follows as the last part of this section.

## General Development Policy

The City of Revere is a residential community in the Boston metropolitan area. An older city it suffers from a deteriorating infrastructure, traffic congestion, and a limited tax base. Historically, the character of Revere has been one of a residential/resort municipality with little commercial or industrial development. Over the years, the City has held a very strong pro development policy in order to promote economic development and expand the tax base. This policy is evidenced in the Zoning Ordinance which is loosely written, permissive in the sense of granting variances and special permits, and cumulative in nature. In many instances the development pattern which has emerged is an inappropriate mix of uses and designs.

Currently, the City Administration is in the position of dealing with a somewhat less than optimal set of conditions. Poor planning decisions made in the past resulted in filling of wetlands, development in flood retention areas, and conflicting land uses. These conditions

coupled with the deteriorating sewerage system and the inadequate drainage facilities leave the City in the position of having to spend money on the infrastructure before allowing any tax-revenue producing development to take place. While there are still areas of the City suitable for development a much closer look is being taken at the potential impacts of development.

Under the present administration efforts are being made to change this trend of "development at all costs". Recent winter flooding conditions have brought an outcry from the citizens for caution in growth and assurances that new construction will not aggravate the flooding situation.

The Mayor, in an attempt to further control growth has appointed a full time staff member to the Conservation Commission instituted a Development Cabinet which reviews all proposals for development, hired planning consultants to coordinate development in the Revere Beach Area and hired engineering consultants to proceed with the sewer and drainage improvement studies.

#### Subarea Analysis

##### 1. Point of Pines

The Point of Pines is a medium density residential area of one to two family homes. The homes are of substantial size and average incomes in the Point of Pines tend to be somewhat higher than those in other areas of the City.

The potential for new development in the Point of Pines neighborhood is fairly low due to the unavailability of vacant land. No major redevelopment projects are anticipated in this area nor would they be desirable. Two non-residential proposals have been submitted in recent years to the City, but rejected due to the required filling of the Pines River.

The City is not seeking any new development in the Pines area because it is an established stable neighborhood. Development problems associated with the Point of Pines include interior drainage and sewage difficulties and wave overtopping in the area of Harrington Avenue. There is a pumping station and chlorination plant at the northern most section of the Point of Pines which drains runoff from the neighborhood into the Pines River. The sewage problem is one of elevation resulting in the inability to gravity feed sewage through the system. The poor condition of the Pines has caused some flooding from seawater during northeast storms.

No change in the development pattern is recommended for this area. The existing single-family residential zoning should be maintained in order to protect the Point of Pines from any major development.

## 2. Riverside

The Riverside area of the City, located along the Pines River west of the Point of Pines, is a densely developed single family residential neighborhood. Other uses within the subarea include the North Shore Boat Works, Captain Fowler's Marina, Jacob's Ladder (a nightclub), and Gibson Park, a neighborhood recreational facility.

Problems associated with the Riverside subarea include poor automobile and pedestrian access through the neighborhood to the Boat Works and the park, erosion of the shoreline along Mills Avenue, and pollution of the Pines & Saugus Rivers from upstream sources.

Pressures for new development in the area come from proposals for the expansion of existing facilities. Jacob's Ladder, directly west of the General Edwards Bridge would like to add motel and boat dockage facilities to their present site. Captain Fowler's Marina, west of the nightclub, would like to expand the number of slips available, and expand indoor boat storage and fuel storage space. Both of these expansion plans would require dredging of the Saugus and Pines River.

The City's plan for the Riverside Area include expansion and improvements to Gibson Park including a general clean-up of the area, erosion control along Mills avenue, improved pedestrian access from the neighborhood to Gibson Park and the City-owned north parcel, screening of the Boat Works from the residences and park, and development of a boat landing in the North Parcel.

The City's development policy for the subarea is to carry out the Recreational Plans for expansion and improvement of Gibson Park and to limit the expansion of existing commercial or marine industrial facilities.

## 3. Revere Beach Boulevard North

The Revere Beach Boulevard from Oak Island Road to Northern Circle is an areas of mixed land uses. Some structures along the Boulevard were destroyed by the February 1978 blizzard and have subsequently been demolished. Existing land uses in the areas are

primarily residential with some interspersed businesses. The Revere House, a large housing complex for the elderly is the largest and most recent development along this section of Revere Beach Boulevard.

This area of the City (Growth Pressure Area, No. 4) is realizing a high degree of development pressures due to the Ocean-front setting and the availability of land under single ownership. A proposal for the construction of a 75 unit condominium has been submitted to the City in recent months. Other proposals for the area include a restaurant, for which a building permit was granted prior to the rezoning, and proposals for three to four unit residential structures. An apartment building along the Boulevard was also recently converted to condominiums.

However, there is one major obstacle to any new construction in this area and that is a sewer surcharge problem. The surcharge of sewers in this area of the City instigated the City Council to downzone part of the area and to place a building moratorium on the entire northern section of the Boulevard. Following this action the State Division of Water Pollution Control (DWPC) placed a ban on new sewer connections along the Revere Beach Boulevard. This ban leaves the City in the awkward position of having the ability to grant a building permit but not an occupancy permit. A developer would need a permit from the DWPC in order to tie in to the existing sewer line and it is unlikely that the permit would be granted until the sewer situation is improved.

In order to rectify the sewage difficulties the Mayor and the City Council have authorized the engineering firm of Hyaden, Harding and Buchanan to proceed as quickly as possible with the second phase analysis of the sewer system.

The City's development policy for this section of Revere is for high density residential use. The Southern portion of the area was recently rezoned by the City Council from a general business to an apartment district. The purpose of the rezoning was to encourage high quality housing development in the city and to prohibit the movement of lounges and other commercial uses from the Revere Beach Development site (to the south) to this area of the Boulevard.

It is recommended that the City pursue the policy of high density residential development along this section of the Boulevard. However, this recommendation is qualified by the requirements for sewer upgrading and flood proofing techniques.

#### 4. North Shore Road North

This subarea is located south of Riverside between the B & M right-of-way on the west and North Shore Road on the east. Although it is mostly water, the Pines River, several commercial establishments are situated on the shoreline west of North Shore Road. These include a Lobster & Seafood outlet, a Tuna Club, North Shore Marine and a Veterinarian and Kennel operation. The largest establishment in the subarea is Rent-A-Tool, adjacent to the Oak Island neighborhood which stores heavy equipment, trucks and trailers.

Most of the subarea is low-lying marshland and flood retention area.

The only existing pressures for development are the expansions plans for North Shore Marine which include dredging for 80 boat slips and filling for expansion of the ground facilities. The North Shore Marine owners have been in the process of acquiring permits for this expansion for six years.

Pressures for the continued filling and development of the subareas are anticipated in the future because of the Revere Beach Connector. The Connector will pass to the south of the area and will include an intersection at North Shore Road. The existing commercial and industrial zoning would permit a variety of land uses to be developed in the area. (See Growth Pressure Area, No. 3)

The future use of this subarea will depend greatly upon the design and construction techniques of the Revere Beach Connector and upon the improvements made to the County Ditch drainage system. While the City does not advocate development of wetlands, future development policy of this area will depend on other long-term projects.

#### 5. Saugus Marsh East

This subarea, located between Route 107 on the west and the B & M right-of-way on the east, is marsh land formed by the Pines River and Diamond Creek. The area is part of the larger Saugus Marsh network which is formed by the Pines River and Saugus River to the north. Most of the marshland is undeveloped, although over the years encroachment has occurred, particularly on the southern side.

There is some pressure for developing the fringe areas of the marsh especially along Route 107 and north of Hastings Street and Naples Street. There is some feeling among City officials that

these areas on the Periphery should be allowed to develop for tax purposes, (see Growth Pressure Area, No. 2). However, the neighborhood bordering the marsh on the south is opposed to any new development.

A majority of the land is owned by three parties. Through discussion with the property owners it has become apparent that they will not immediately give up the development rights of the marsh through conservation easements or donations to the Conservation Commission.

The City's policy toward development of the marsh is unclear. Due to the lack of suitable vacant land and the desire to expand the tax base of the City through industrial development, the entire marsh area has been zoned for industrial use. However, the flood-retention value of the marsh has become exceedingly apparent to City officials and citizens with the recent winter flooding conditions in the City. The City's drainage system flows into Diamond Creek at three different locations within this subarea. Additionally, assessments on the marsh properties have been kept purposely low ranging between \$.01 and \$.03 per square foot. This low assessment keeps taxes paid on the marsh low, thereby encouraging property owners to keep the land in its natural state.

All City officials and departments feel that the marshland is a necessary flood retention area. However, there are varying degrees of opinion as to how much, of any portions, of the area should be allowed to develop. Besides the environmental problems and expensive engineering techniques associated with construction in a wetland, a third major problem is lack of access. Development in most areas would require the construction of access roads and, therefore, additional filling and alteration of the area.

In regards to altering the wetlands within Revere, the Conservation Commission is taking a much stronger role than it did in recent years.

A further cause of uncertainty regarding the marsh area is the Revere Beach Connector. The Draft Environmental Impact Statement for the road project should include more information on the impacts of construction in a marsh. The proposed interchange of the Connector and Route 107 could create more pressures for filling and developing the western periphery of the marsh.

In summary the City's policy appears to be one of allowing minimal development in the southwest corner of the marsh and preserving the majority of the marsh for flood retention areas. The



Connector is viewed as a barrier to future development in the northern section of the marsh and not as an incentive for further filling and development of the marsh.

It is recommended that the zoning be changed in this area for conservation or recreation.

#### 6. Oak Island

The Oak Island neighborhood is a medium density residential area of one and two family homes. The neighborhood was at one time a high ground island in the salt marsh, covered with oak trees and used as a picnic grove. Since that time the Island has been subdivided into small housing lots of approximately 1,600 square feet. The housing stock is primarily older summer cottages which have been converted to year-round use. The neighborhood is divided east to west by the B & M right-of-way.

There is very little pressure for new development in this area due to the lack of vacant land and the environment. The Oak Island neighborhood is virtually surrounded by salt marsh so any new development would require filling and alteration of the marsh. The regulations of the Wetlands Protection Act and the administration of that Act by the City's Conservation Commission have been the cause to recently restrict new development in the Oak Island neighborhood. The proposal submitted to the City called for the construction of eight single-family homes on land to be filled to the south side of the Island. Because of the required filling the proposal was cut back to allow the construction of only two homes adjacent to the B & M right-of-way.

The City does not desire new development in the Oak Island neighborhood with the exception of construction of vacant lots on existing streets. The extension of the Island to the north, west or south would be impractical due to topographical features of the land. The Pines River and Diamond Creek run within 200-500 feet of the island on the north and south respectively. Additionally the land drops off dramatically into the salt marsh so that any extension would require tremendous amounts of fill. A further obstacle to new development are the drainage problems in that portion of Oak Island east of the B & M right-of-way.

#### 7. Lower Revere Street/Revere Beach Boulevard

This subarea is located between North Shore Road and the Revere Beach Boulevard, Oak Island Street on the north and Revere Street on the south. The area is one of mixed land uses with some

existing summer housing stock, and old summer cottages converted to year-round use. More recent development along the Boulevard include commercial eating and drinking establishments.

A majority of the subarea is prone to flooding in heavy rains. The eastern branch of the County Ditch flows through the area, northerly from Revere Street and then westerly under North Shore Road to Diamond Creek.

This area of the City is experiencing tremendous pressures for new development for several reasons, (see Growth Pressure Area, No. 6). The subarea is contiguous to the Revere Beach Development Project of high density residential development, improved transit and highway access, park development and beach improvements. Major projects such as these can be expected to generate "spin-off" improvements or the potential for improvements in adjacent areas. Additionally, a majority of the subarea is ocean-front land including two or three vacant parcels of significant size on the Boulevard. A third source of pressure for new development is the demolition of the beach commercial facilities. Many of these establishment owners, who maintain liquor licenses, are seeking comparable ocean-front settings on the Boulevard. Some establishments have in fact relocated into this Boulevard.

Some proposals for development in this subarea have been submitted to the City. One proposal was for a small apartment structure north of Revere Street and immediately west of the County Ditch. The Conservation Commission denied an Order of Conditions because it was believed construction on the site would aggravate flooding conditions in the surrounding neighborhoods. The developer subsequently appealed that decision to the State Department of Environmental Quality Engineering, where the case is still under consideration.

Constraints to new development in this subarea are the same as those for subarea number three; that is the State ban on sewer connections the flood-prone nature of the area, and the needed improvements to the County Ditch.

Due to these constraints the City's policy toward new development is extremely cautious and will most likely remain so until improvements are completed to the drainage and sewer systems. Although cautious about immediate development, the long-range policy of the City is one of promoting quality, high density residential development along the Boulevard.

Since most of the remaining land in the subarea is low lying and prone to flooding a strong policy is not promoted. Additionally,

a majority of the area will be taken up with the MBTA ramps from the Connector to the Wonderland Garage, the Blue Line Extension to Lynn, and the Connector Road and North Shore Road Intersection. The final designs of these projects, when available will more clearly define the development potential of this part of the sub-area.

#### 8. North Shore Road

This subarea bordered by North Shore Road, Revere Street and the B & M right-of-way is in an area of mixed residential use with commercial facilities along the two major roads. More than half of this property is low lying and prone to flooding. The County Ditch winds westerly through the area under North Shore Road and the B & M, through a tidal gate to Diamond Creek. The low lying areas flood in periods of rain with high tides when the tidal gates remain closed prohibiting drainage from the Ditch into the Creek.

There has been some pressure for filling and developing the area bordering North Shore Road on the west, particularly that area zoned for general commercial use, (see Growth Pressure Area, No. 5). Permission was granted to one property owner to fill a small 100 square foot piece of land adjacent to the railroad tracks. However, no construction has taken place on that site.

The Revere Beach Connector Road is designed to pass through this area with some form of intersection at North Shore Road, and then continuing south easterly to Ocean Avenue. This road and interchange which will provide direct access to the regional highway network will most likely create additional pressure for development in this area. Under the existing zoning many different types of development could take place. The road project could most assuredly instigate zoning changes to more intense uses, particularly in the small residential neighborhood north of Revere Street.

It is difficult to formulate a City policy toward development in this area for several reasons. The zoning is varied with strip commercial along North Shore Road and Revere Street, industrial zoning in the marsh area east of the B & M right-of-way and general residential in the remaining sections. Additionally it is not clear at this time what the exact design and location of the Connector Road will be and how the MDPW plans to deal with the runoff from the road or what improvements will be made to the County Ditch in this area. Until these issues are cleared, the City can take no positive position on future development in this area. It is clear that no further filling can be allowed

in the area as this would potentially intensify the flooding conditions.

#### 9. Revere Beach Development Project Area

The Revere Beach Development Project is bordered by Beach Street, the MBTA Blue Line, Revere Street, and the Revere Beach Reservation. Land uses within the subarea consists primarily of underutilized parking lots for the MBTA and the MDC. Other uses include the Wonderland Transit Station and the MDC police and beach facilities.

The area is undergoing a complete revitalization effort including construction of a new transit station/garage complex, a connector highway, high-income housing development, linear park construction, and commercial development on the City's Joint Development Parcel. Housing construction is expected to begin in the Fall of 1979 and park construction is underway, (see Growth Pressure Area, No. 7).

City growth policies regarding this area of the City have been positive for a number of years. It is the desire of the city officials to coordinate all activities in the area and to seek the best possible alternative for well intergrated design of the numerous development projects.

#### 10. Kelly's Meadow

The Kelly's Meadow area of the City is located south of Revere Street between the B & M right-of-way and the MDC parking lots on the east. The area is primarily residential with some commercial establishments along North Shore Road and Revere Street. The County Ditch runs easterly through the subarea starting at the Wonderland Park Dog Track parking lot. The entire area is prone to flooding when the County Ditch backs up during periods of heavy rain with high tides.

In recent years, there have been no perceived pressure in this area for new development. However, with the development of the North Lot Condominiums, the MBTA station/garage complex, and the Connector Road, long range pressures are anticipated. Property values in the area should increase with these major improvements and intensify pressures for redevelopment.

The City realizes the potential of this subarea due to its proximity to the overall Beach Revitalization Project and holds positive policy toward revitalization of the subarea. However,

this pro-development policy is qualified by the following conditions:

1. Provision of fair-market value compensation by any developer to existing property owners for any "takings";
2. Completion of improvements to the City drainage and sewerage systems;
3. Flood proofing requirements for any new development.

#### 11. Upper Revere Street Neighborhood

This subarea is located north of Revere Street between Route 107 on the west and the B & M right-of-way in the east. It is a stable neighborhood of single and two family homes with some small scattered commercial uses along Revere Street. The other major land uses in the area are "institutional, Saint Anthony's Church at the corner of Breed and Revere Street and Saint Theresa further east on Revere Street.

There are two sections of this subarea which are either realizing pressures for new development or where pressures are anticipated in the future, (see Growth Pressure Area, No. 2).

There is some feeling that the marshland immediately north of the urbanized area should be filled out to Weeden Street ( a paper street) for additional residential development. Within this same area two homes were recently constructed on Union Street which most likely required the filling of low lying or wet areas. These homes were constructed without prior notification to the Conservation Commission.

Pressures for new development are anticipated in the southwest corner of the subarea near Brown Circle. Although there has been some small-scale filling operations along Naples Street in past years, this practice, is expected to intensify with the construction of the Revere Beach Connector and its interchange with Route 107.

The current zoning for most of the subarea is general residential with commercial districts 100 feet deep on either side of Revere Street and Route 107. The city's development policies toward new development are two-fold.

The City has taken a strong policy toward prohibiting further encroachment into the marsh north of Hastings Avenue. The residents in this neighborhood do not want further development.

They want the marsh left in its natural state as a flood retention area and also as a buffer between the neighborhood and the Connector Road. Additionally, a large parcel of marsh land north of Hastings Avenue was donated to the City to use as a park or a natural area. This city-owned parcel will prohibit further encroachment by development in this area.

The City's policy in the southwest corner of the subarea is one of allowing minimum development provided engineering techniques are used which will mitigate negative impacts on the bordering marshland.

## 12. Squire Road

This subarea includes all the urbanized land north of Squire Road between Cutler Circle and Route 107. It is an area of intense development including commercial, industrial, and residential uses. Although recently developed the entire area was poorly designed. The Squire Road section of the City is plagued with traffic congestion and poor automobile circulation movements. Streets are often not delineated from parking lots and the entire paved area is in a state of disrepair. In addition, the development is such that apartment structures are adjacent to industrial uses or commercial establishments with no buffer zones or landscaping.

More than any other part of the Study Area, development in this subarea has encroachment upon the Saugus Marsh. A major reason for this is the I-95 Embankment. When the fill for the I-95 was placed in the marsh, the ecosystem was changed and divided in two. South of the embankment the land was filled for development. The City in an attempt to expand the tax base zoned the area for commercial and industrial use.

Development extends northward to the embankment behind the shopping center. Further to the east encroachment has also occurred along Ward Street with heavy equipment storage, a vacant skating rink and apartment buildings.

The remaining vacant land within the subarea is in the eastern portions near Route 107. There are perceived and real pressures for additional filling and development of this part of the subarea.

All of the subarea except for the shopping center is zoned for industrial use. Because the ordinance is permissive and cumulative, almost any kind of development is allowed within an industrial district, (see Growth Pressure Area, No. 1).

The future of the subarea is contingent upon:

1. Removal and/or relocation of I-95 embankment;
2. Alignment and design of the Revere Beach Connector;
3. Connector interchange with Route 107.

The City's Policy is one of discouraging development until there is some direction from the Commonwealth on these three issues. It is also the policy of the City that the Connector serve as a barrier to further development in the marsh and not as an inducement for further development.

#### 13. Saugus Marsh West

This subarea is located between the Northgate development and the City Boundary. It is part of the Saugus Marsh and includes the MDC seaplane basin, the Pines River and Diamond Creek. All of the area is undeveloped marshland except for the I-95 embankment, which crosses the subarea in a northeasterly direction.

The future of this area will change and the ecosystem will be altered with the development of the Revere Beach Connector through the southern portion of the subarea. A second change in the marsh will be either the removal of I-95 embankment or the relocation and reuse of the fill for the Connector Road.

The only portion of the subarea that is under pressure for development is the 100 foot commercially zoned strip on the west side of Route 107. This part of the subarea will be most heavily impacted by the Connector's intersection with Route 107 and pressures for development may intensify with the construction of the Road. However, no proposals for development have been submitted to the City at this time.

Although the majority of the marshland is zoned for industrial use, it is landlocked and inaccessible without new road construction. The City's Policy for this area is to preserve that area north of the Connector for flood retention purposes. Development in the marsh is discouraged with the exception of recreational uses parallel to the Connector or in the seaplane basin.

#### 14. North Revere

Subarea 14 is a small section of North Revere which borders the Saugus Marsh. Situated at the base of a ledge outcropping,

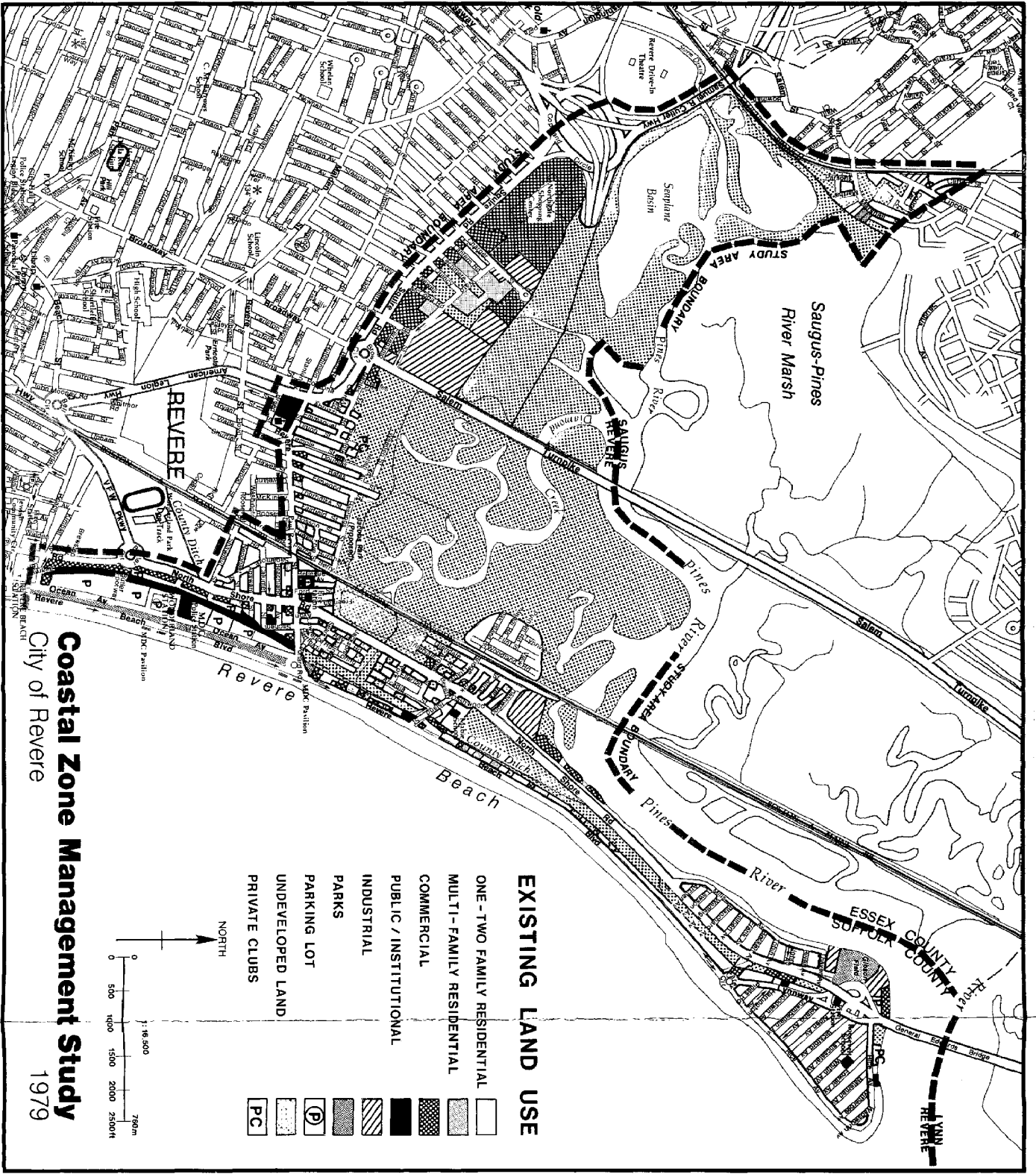
development in the area includes several single family homes. The majority of the subarea, however, is vacant unimproved land.

Problems associated with the area include some local flooding caused by runoff draining from the hill to the low lying areas close to the marsh.

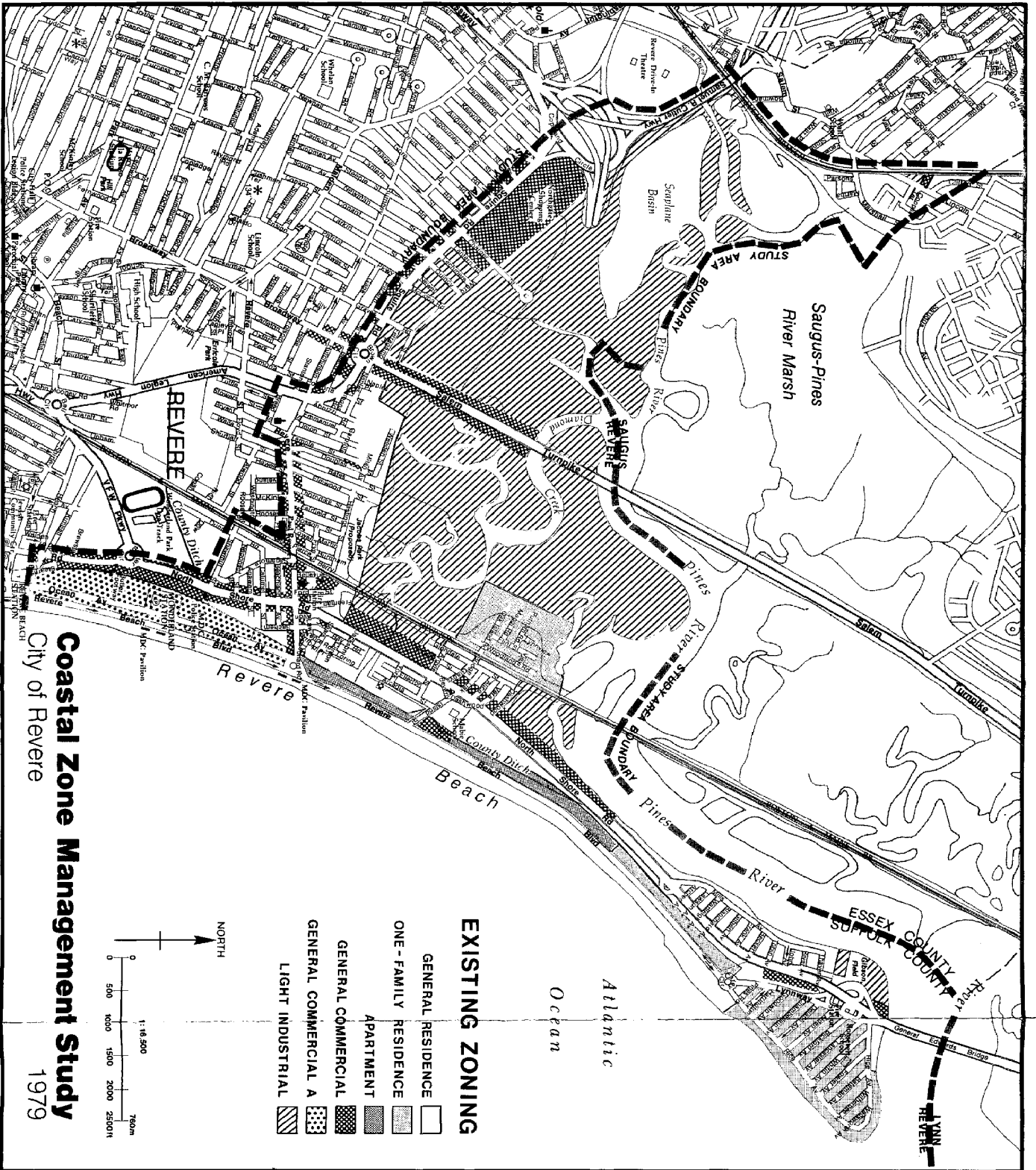
There are no known development pressures in this section of North Revere. The City's development policy is one of maintaining existing residential zoning for this area of the City.

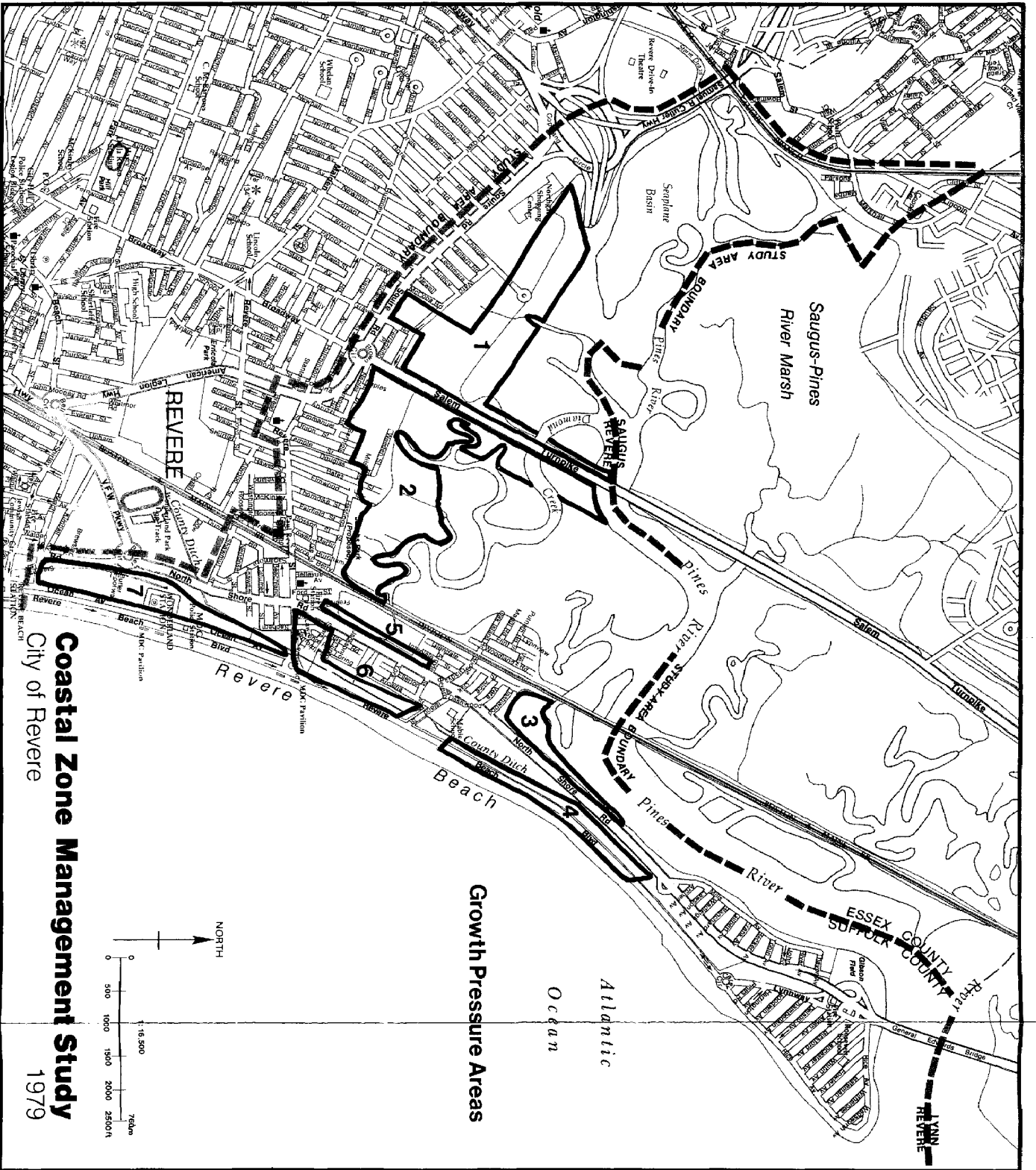






**Coastal Zone Management Study**  
City of Revere  
1979





Recommended Development Policy  
and Future Land Use

## Introduction

The City of Revere is under a substantial amount of pressure for new development. This development pressure is due, in part, to the transportation improvements proposed for the City (MBTA and Revere Beach Connector), the limited amount of available land, and the natural features of the City (Broad Sound, Revere Beach, and extensive salt-marsh) which would be an asset to many types of development.

The City's current administration recognizes that economic development is necessary in order to expand the City's declining tax base. However, it is also recognized that caution must be taken in reviewing any development proposal due to the flooding situation in many low-lying areas of the City, the extent of wetlands or flood retention areas, and the inadequate, deteriorating storm water and sanitary sewer systems.

The purpose of this CZM Community Grant Program is to formulate recommendations which will guide City officials in making responsible decisions about future development within the CZM Study Area. Some of these recommendations will be policy statements (presented in this section) while others will be recommendations for legal mechanisms which would control growth and implement the recommended policy. These legal mechanisms are discussed in Section 3 of this Report.

Recommended policies for future land uses and development in Revere evolve from several overall objectives for the future of the City. These general objectives include:

1. Prohibit any type of new development in environmentally critical areas, primarily the Saugus Marsh and other smaller wetlands areas which retain floodwater and urban runoff.
2. Cap or restrict growth in marginally significant areas such as those bordering wetlands and those with chronic flooding problems, so that a gradual encroachment of the wetlands will be prohibited.
3. Promote growth in designated "development" or "growth" areas so as to concentrate more intense uses in particular sections of the Study Area.
4. Preserve and protect the character of existing neighborhoods by prohibiting the expansion of commercial and industrial uses into residential areas.

The policies that follow represent an attempt to balance economic and environmental interests. The City of Revere cannot afford to stop development at all costs, just as it cannot afford to promote it at all costs. There are obvious "trade-offs" which must be made in order to

promote a safe environment in the City, that is, a safe social, economic and ecological environment.

For example, the decision to endorse the construction of the Revere Beach Connector across the Saugus Marsh is, in itself, a trade-off. The road during construction and when completed will alter the hydrologic and biological functions of the marsh. These potentially negative impacts, however, will be balanced by the positive impacts of removing traffic from local streets (particularly Revere Street) and reducing air pollution caused by the existing traffic congestion. Additionally, some of the negative impacts of the road on the marsh can be partially mitigated by design features such as a viaduct design, and mechanisms to handle urban runoff from the road.

The most controversial area in the City of Revere is the Saugus Marsh. Since this is the only remaining major parcel of vacant land in the City, there are varying opinions among City officials as to what should be done with the marshland. The area is currently zoned for light industrial use and many City officials see the marsh as an excellent opportunity for expanding the tax base through light industrial undevelopment.

It is the purpose of this Study to evaluate the varying opinions and formulate policies and recommendations which are both sound and acceptable to the Mayor and the other public officials.

Since this area of the City is the largest natural resource and the most controversial in terms of future use, and the most critical environmental resource, the Saugus Marsh will be discussed in greater detail than other sections of the Study Area.

#### Recommended Development Policy

The discussion of recommended development policy is organized according to the overall objective to which the policies apply. Therefore, there are four categories of development policy: Preservation; Restricting Growth; Development Opportunities; and Maintenance of Existing Conditions. The statement of policies for each category also discusses the rationale for the policy.

##### 1. Preservation of Critical Resource Areas

- a. Preserve the majority of the eastern Saugus Marsh as a natural or conservation area in order to protect the flood-water retention function and biological productivity of the saltwater wetlands.

The CZM Environmental Summary Report (Section (1)(c))

identified those resource areas defined in the Wetlands Protection Act, which are located in the Study Area. The largest and perhaps the most significant resource is the Saugus Marsh which encompasses over one half of the Study Area. Identified as a saltwater wetlands, the marsh has tidal influence from the Pines and Saugus Rivers. In addition to its biological functions, it also serves as a floodwater retention area. The eastern section of the saltmarsh between Route 107 and the B & M right-of-way is a drainage basin for approximately one half of the City's land area. Because of these critical functions of this part of the Saugus Marsh, it is recommended that no further encroachment of the marsh be allowed and that measures be taken to prohibit any development within this saltwater wetlands. This policy is in keeping with the CZM policy of prohibiting development in saltwater wetlands. Legal mechanisms for prohibiting development in the privately owned marsh are discussed in Section 3 of this Report. The Executive Office of Environmental Affairs, Department of Environmental Management has undertaken a "wetlands" mapping program which will identify wetlands throughout the Commonwealth. When completed, this project will provide local municipal governments and particularly local Conservation Commissions with a legal definition of the wetlands under their jurisdiction. While this project is incomplete, it is assumed that the majority of the Saugus Marsh will be classified as Wetlands.

- b. Preserve the Saugus Marsh west of Route 107 and north of the proposed Revere Beach Connector for flood water retention, maintenance of open space, and biological productivity.

This value area will be most heavily impacted by the Revere Beach Connector. Due to the severity of these impacts and the pressure for development which might arise due to the improved highway access, the City should take steps to preserve the marshland north of the Connector.

- c. Preserve the marshland from North Shore Road to the B & M right-of-way between Revere Street on the south and Oak Island Street on the north for floodwater retention purposes.

The drainage and flooding problems in the City are discussed and examined in detail in Section 5 of this



Report. That engineering study resulted in a number of recommendations for improvements to the eastern branch of the County Ditch which drains an area of approximately 7 acres east of the B & M embankment. The area of the City is impacted by severe storms and flooding which results from inadequate drainage facilities, tidal surges from the Pines River, and wave overtopping on Revere Beach Boulevard.

One of the recommendations which evolved from the drainage study is the preservation of a piece of land for a holding basin in the area between North Shore Road and the B & M. The engineers estimated that approximately four acres of land would be necessary for the creation of a basin about three feet deep with a lined bottom to prevent the entrance of groundwater into the basin.

This area of the City (subarea 8) will be under considerable pressure for development due to the Revere Beach Connector's intersection with North Shore Road. It is recommended, however, that this area be set aside and preserved for a stormwater holding basin and that no development be considered in this area.

- d. Allow no development along Route 107 north or south of the Connector Road.

Both sides of Route 107 are presently zoned for commercial use to a depth of 100 feet from the highway. Any commercial establishments on Route 107 would have serious traffic and environmental impacts due to the highway intersection and natural features of the marsh.

The Connector's intersection with Route 107 is proposed as a closerlead design which will account for approximately one third the linear distance of Route 107 between Brown Circle and the Revere boundary. Any potential for commercial development on the area of the intersection would be eliminated due to the impracticality and hazard of traffic movements.

Both sides of the remaining section of Route 107 are water - Diamond Creek and the Pines or wetlands to abutting the streams. Development along the section of the road should be completed prohibited.

### Rationale for Preserving Saltwater Wetlands

There are approximately 100 acres of tidal saltmarsh located within the Coastal Zone Management Study area in the northern section of Revere. These marshlands are a valuable resource to the City in terms of floodwater retention and wildlife and vegetation productivity. The marshes also provide a quiet area for passive recreation such as walking and bird watching and an aesthetic relief from the surrounding urban development.

The nature and ecological significance of a saltmarsh must not be overlooked. A report prepared for the Massachusetts Department of Natural Resources entitled A Study of the Marine Resources of Lynn - Saugus Harbor succinctly describes the value and significance of a saltwater marsh.

"Plants provide food and energy needed by animals. Seventy percent of the oxygen in the atmosphere is derived from phytoplankton. Saltmarsh vegetation, like other plants, transforms carbon dioxide and water into oxygen and food by utilizing the energy of sunlight".

"Because the marine food chain begins with its primary source of food, plants, and progresses through a series of herbivorous and carnivorous organisms, it takes hundreds of pounds of plant life to produce a fish of marketable or recreational size. Many species of fish and shellfish utilize the saltmarsh for food and cover. Between 2/3 and 3/4 of the fish and shellfish of commercial and recreational importance in the United States spend at least one phase of their life cycle within an estuary (Hutton, 1968). Saltmarshes also provide food and cover for furbearers, shorebirds, and waterfowl (Commonwealth of Massachusetts, 1963). Salt marshes act as buffer zones between coastal waters and the uplands, often preventing serious land erosion problems caused by tidal action and severe coastal storms. Their value aesthetically is priceless."

The Saugus Marsh supports part of the life cycle of fin and shell fish, provides shelter, resting and nesting sites for a variety of waterfowl and marsh birds, and supports a variety of vegetation. In addition the marsh acts as an important floodwater retention area, absorbing seasonally high tides from the Saugus and Pines Rivers and runoff from the surrounding urbanized area.

The marsh also offers quiet areas for passive recreation, such as walking and bird watching, in the midst of a congested urban environment.

Total development of the marshes would destroy a natural resource which is essential not only to the marsh's wildlife but also to the health and safety of the citizens of Revere.

The Revere Beach Connector a limited access highway is scheduled to be constructed across the Saugus Marsh from Cutler Circle on the west to Ocean Avenue on the east. The Draft Environmental Impact Statement (DEIS) for the Road offers two alternative corridors and two designs. The corridor alternatives are parallel with one bordering the urbanized area (Alternative A) and the other extending further into the marsh (Alternative B). The two designs presented are full embankment and viaduct construction.

Whichever location or design is selected, the roadway will have impacts on the marsh which cannot be totally mitigated. The embankment alternative will have more severe impacts since the hydrology of the marsh would be significantly changed, even with design features such as selective ditching.

Change to the marsh itself will be caused by filling on two of the wetlands or shadowing the marsh (viaduct alternative). It is estimated by the Massachusetts Department of Public Works that either corridor or design will alter some 60-120 acres of marshland. The DEIS briefly discusses the impacts of the Connector's construction and operation on the saltmarsh and on its biological productivity. Many of the impacts would be the same for other major developments on the marsh such as shopping centers or residential complexes.

Some of these impacts are discussed in the following paragraphs.

#### Impacts on Water Quality and Aquatic Biology

The construction of highway through Saugus Marsh will have an impact on water quality and aquatic biota. Associated with most construction activities is erosion from areas of disturbed natural vegetation. This increases suspended solids, turbidity and often, true color in surface waters. This has ecological impacts at various stages of the food chain. The turbidity diminishes the depth of light penetration; therefore, the ability of phytoplankton to use light for food production is diminished. Populations of filter-feeders, such as soft-shelled clams (*Mya arenaria*), can be decimated as a result of the increased siltation. The eggs of fin fish, such as the commercially important winter flounder (*Pseudopleuronectes americanus*), are susceptible to siltation. Life processes are carried on by gas exchanges at the egg and water interface. As silt accumulates on top of the egg, the gas exchanges are impaired and

toxins are trapped underneath the layer of silt. The adult fin fish are able to avoid turbidity plumes. However, this avoidance decreases the value of the area for sport and commercial fishing.

Important chemical and physical fluctuations occur twice daily with the two high tides and the subsequent low tides. Some areas located on the far side of the fill could be seriously impaired by the disruption of circulation patterns. During periods of drought, the marsh releases water; and during rainstorms, the marsh absorbs excess water. This capacity could be impaired through the blockage of natural drainage creeks. Areas behind fill that could be seriously flooded will be considered carefully in project design and allowance for drainage will be made.

#### Impacts on Vegetation and Wildlife

"Saltmarsh communities are characteristically, highly productive areas which support life-cycle activities and perform a variety of nature systems functions. These activities and functions take place under a specific set of environmental conditions related to such factors as tidal action, drainage and nutrient concentrations. Consequently, activities occurring in saltmarsh communities which alter these conditions may result in the realization of numerous potential impacts".

If the Road is placed on full impacts associated with the Connector would be direct loss of vegetation, changes in drainage patterns which could lead to changes in vegetation species from wetland to upland, loss of wildlife habitat, siltation of streams, decreased biological productivity, a reduction in floodwater retention capacity, and an increase in the number of pollutants entering the marsh system.

If the road is built on viaduct, the impacts would not be as severe and would primarily result from construction of the road. On a viaduct, the roadway would not interfere with drainage patterns thereby not instigating changes in vegetation. Some vegetation loss would be experienced by the shadow effect on the marsh but not to the extent resulting from the embankment alternative.

Any type of major development in the marsh would have similar environmental impacts as those discussed for the Connector Road. However, the Revere Beach Connector will not only alter the existing marsh system it will also create additional pressures for filling and developing the marshland along the edges of the urbanized area and adjacent to inter-sections at Route 107 and North Shore Road.

Steps must be taken by the City to assure that the valuable marshes are not lost to development.

## 2. Cap or Restrict Growths in Marginally Significant Areas

Many sections of the CZM Study Area are low lying and prone to flooding from inadequate drainage and lack of floodproof construction. These areas include smaller wetlands which most likely were once part of the larger Saugus Marsh system. These smaller isolated wetlands have been partially severed from the major marsh system and manmade barriers such as the B & M embankment and other roads and development. These smaller wetlands, however do still serve as floodwater retention basins for surrounding development.

As more of these low lying areas are build upon and more wetlands are filled and developed, the capacity to retain runoff and flood waters in undeveloped areas is dramatically reduced. Therefore, the water drains into basements of buildings and streets, causing localized flooding in some neighborhoods.

To advocate any major construction in these areas would only aggravate the already serious drainage and flooding situation.

- a. Discourage development in the area north of Oak Island, between North Shore Road and the B & M right-of-way, (Subarea, No. 4). Change permitted uses from commercial and industrial uses to strictly marine industrial uses such as marinas and yatch clubs.

The Revere Beach Connector will intersect with North Shore Road just to the south of this subarea. The existing commercial zoning and the improved highway access to the regional transportation network, might instigate commercial development along both sides of North Shore Road. This type of development should be discouraged for two major reasons:

Traffic Impacts: North Shore Road, Route 1A is a major north-south road to Boston from municipalities north of Revere. The existing high traffic volumes on the road coupled with the high number of traffic accidents, make this area inappropriate for additional automobile, turning movements, curb cuts and traffic generating activity.

Environmental Impact: Much of this area is water, the Pines River, which passes just to the west of

North Shore Road. The remaining area is low lying saltwater wetlands which serves as a flood retention basin for the surrounding urbanized area. Any new development would require filling of the saltwater wetlands, strict adherence to the Wetlands Protection Act and an order of conditions from the Revere Conservation Commission. This filling and development would reduce the flood water retention capability of the subarea.

- b. Discourage any new development on the area north of Revere Street and bordered North Shore Road on the west, Oak Island Street on the north, and the property of the Eastern Massachusetts Electric Company on the east, (western portion of Subarea, No. 7).

This is an extremely low lying area of the City with elevations ranging from 1.8 to 13.9 (at one point) feet above mean sea level. The average elevation in the area is about 4.5 feet.

The area consists of two neighborhoods of single-family homes separated by vacant land and the County Ditch. Most of the housing stock is old including some summer cottages which have been converted to year round use.

Flooding is a chronic problem in both neighborhoods. The County Ditch which is the main drainage facility for the eastern part of the Study Areas passes through the subarea from Revere Street and runs north and then westerly under North Shore Road. During periods of heavy rains the ditch backs up flooding the abutting neighborhoods. However, the inadequacy of the County Ditch is not the only reason for the chronic flooding situation. The engineers examining the Ditch drainage system concluded that even with the recommended \$5.2 million dollars reconstruction of the Ditch system, homes on these low elevations would still have water in the basements due to seepage of ground water and fast saturation of soils during rain.

This area (part of Subarea, No. 7) will be impacted for the proposed transportation projects. Scheduled to be located within the vacant land between the neighborhoods are the Revere Beach Connector, the MBTA ramps from the garage to the Connector, the MBTA Blue Line Extension to Lynn and the relocated County Ditch.

To promote any land of new development in this area, commercial or residential would be inappropriate due to the topography, and out of the question until the major public improvements have reached a stage of final design. The area is presently crowded with residences and when public improvements are completed there may be no potential for future growth.

- c. Limit new development in the area north of Hastings Street and the American Legion Highway (Subarea, No. 11) to minimal residential development. Because the area is low lying and marshland requirements for the maintenance of open space as a trade-off to allowing any development should be investigated. A Planned Unit Development Ordinance should be considered for this area in order to allow density while preserving marsh areas for open space.

The specific area where residential development should be allowed is contiguous with existing neighborhoods. Street maps of the City indicate a paper street, Weeden Street immediately north and west of Hastings Street. It appears feasible to allow a small amount of residential development south of Weeden Street provided drainage and flooding techniques are utilized and it can be demonstrated that there are no negative impacts in the abutting neighborhoods. Because of the residential nature of the area, industrial development should not be permitted as called for in the zoning ordinance.

Industrial development would require large servicing roads and more paved areas for parking. Access to the site would not be feasible from Route 107, due to the Connector and intersection. Therefore, if industry were permitted in the area, related truck traffic would be forced to use neighborhood streets. This truck traffic would negatively impact the residential area and would not be a desirable "trade-off" for industrial development.

- d. The area on North Revere included in the CZM Study Area is a low density residential area bordering the Saugus Marsh. The neighborhood is located at the base of a ledge outcropping and yards of homes back into the marsh.

It is recommended that the general residential zoning

in this area be changed to single family. Any type of intense development should be discouraged in this subarea due to the nature of the land. It is also recommended that existing residences in the neighborhood be required to tie into the sewer line in order to prevent water quality degradation in the Saugus Marsh.

### 3. Promote Development in Designated Growth Areas

Most of the policies previously presented in this report were aimed at preserving and protecting the saltwater marshes and inland wetlands located within the CZM Study Area. The preservation of these areas for purposes of drainage and biological productivity is essential to the safety and health of the citizens of Revere.

However, opportunities for new development must also be examined within the Study Area so that future land uses might be recommended. There are opportunities for concentrating growth and development in three sub-sections of the Study Area. It is recommended that these areas be designated "growth areas" so that future development can be guided away from the critical resource areas discussed in the previous paragraphs.

In this manner the economic and ecological interest are balanced; preserving wetland on one hand while creating opportunities for development on the other.

These policies coupled with a variety of recommended legal implementation mechanisms will provide the City of Revere with the tools necessary to guide future growth and development within the CZM Study Area.

The areas recommended for "growth area" designation are:

- a. Revere Beach Development Area
  - b. Revere Beach Boulevard Area
  - c. Northgate Shopping Center/Squire Road Area
- a. The Revere Beach Development Area has been a focal point of redevelopment efforts and major development proposals for a number of years. Uniquely located between the Revere Beach Reservation and the Blue Line transit service, it continues to be the City's primary development area.

The site presently consists of three underutilized



parking lots for the transit patrons and beach users.

A major housing development consisting of 630 units of high-income market rental apartments is anticipated on the so-called South Lot. The Atlantic Savings Bank, the designated developer for the residential development, should break ground on this project in the near future.

The second lot, Parcel H, is located directly in front of the Wonderland Transit Station and is presently a commuter lot for MBTA patrons. Parcel H is the City's Joint Development Parcel and proposals for its future use include retail development, a cinema complex, office space and/or a hotel/convention center. The City has completed a first round of marketing efforts for Parcel H and will continue to promote development on the site.

The North Lot, north of Parcel H, is slated for residential condominium development. The time schedule for construction on this lot is five to six years.

Major public improvements proposed for the Revere Beach Development Area include an upgraded transit system, a new 2,000 car commuter garage and station at Wonderland Station. The construction of the Revere Beach Connector, a limited access highway, will provide automobile access to the Development area and directly into the garage via a ramp system. In addition, improvement to the Revere Beach Reservation is, underway including a new linear beach-front park and pavillion rehabilitation.

The unique characteristics of the Beach Development Area including the ocean-front setting and the highway and transit access to a regional transportation network, give this area many advantages over other development sites in the greater Boston metropolitan region.

It is recommended that the City pursue its strong policy for mixed residential and commercial development in the Revere Beach Area. However, this area has experienced flooding problems in the past due to wave overtopping of the seawall and an inadequate drainage system. It is, therefore, recommended that any proposals for construction be carefully reviewed in terms of flood-proofing techniques and handling of urban runoff and sewage. It is also recommended that adequate drainage and sewage systems be available for any new development.

- b. The section of Revere Beach Boulevard north of Revere Street presents some interesting opportunities for development in an ocean-front setting.

It is recommended that the City promote a strong policy for residential condominium development along the Boulevard with the condition that repairs to the sewer system be completed prior to any new construction.

This area of the City is presently under a sewer connection ban from the Massachusetts Department of Water Pollution Control, which means, temporarily, that no new sewer connections will be allowed along the Boulevard. The main sewer which runs parallel to the Boulevard is in a state of disrepair and surcharge problems exist along the entire length of line from Point of Pines to Revere Street. The City has an engineering firm working on the Phase II Analysis of the sewers city-wide. This analysis will determine exactly what repairs are necessary. Engineering design will be followed by construction which will be completed by 1982.

It is further recommended that the City institute a design criteria and review process for any major housing proposals along Revere Beach Boulevard. Design elements such as provision of open space, setbacks, access to and views of the ocean, and general layout of buildings so that a wall effect is avoided, should be considered when reviewing housing development proposals.

Because the Boulevard is prone to flooding from wave overtopping of the seawall, any new construction should utilize flood proofing techniques such as placing utilities above the historical flood level.

Careful attention must be made to the properties abutting the rear line of the Boulevard properties. The land along the Boulevard drops off dramatically to the west of the road. The lower lying areas in the rear are prone to drainage and flooding problems due to the topography and the inadequacy of the drainage ditch. New development in these lower lying areas adjacent to the ditch is not recommended.

- c. The Northgate and Squire Road area of the City of Revere constitutes the most recently constructed commercial and residential development of the City.

As discussed in a previous section of this report, the Squire Road area was once marshland which was filled from Squire Road to the abandoned I-95 embankment. The development now extends almost to the embankment in back of the Shopping Center. Illegal fill (demolition wastes) has been placed between the edge of the Shopping Center parking lot and the embankment.

Urbanized commercial development extends easterly along Squire Road from Northgate to Brown Circle. To the north of the commercial establishment are several apartment complexes and a scattering of industrial uses such as heavy equipment storage. All of this development has encroached upon the marsh.

The area is a myriad of uses with very little design consideration, poor traffic circulation, and little or no amenities such as landscaping or buffer zones between uses, or control of mix of uses and architecture.

The City recognizes that additional development would be compatible with the existing character of the Area. Because of the area's existing status as a development area it is logical that future development be guided into the Squire Road section of the City.

Although previously a wetland area, the extend of existing marshland between Squire Road and the I-95 embankment is minimal. Immediate or short range development, therefore, might require some filling of the remaining wetland. While this type of alteration of wetlands is, on the surface, not a desirable activity, it would create some immediate opportunities for growth and development within the City. It is recommended that any proposal for construction in the remaining vacant land be carefully reviewed for design consideration and utilization of engineering techniques to mitigate flooding and drainage impacts.

It is further recommended that the City take immediate steps to examine the Squire Road area in more detail, particularly design details such as buffer zones, landscaping and architectural and other amenities.

In a longer range perspective, it is recommended that the Revere Beach Connector serve as a barrier to any development further into the marsh, north of the Road, and that the area between the Connector and the existing urbanized area be opened up for new development.

This policy will provide the City with growth opportunities which would balance the closing of larger tracts of land to development.

Pressures for new growth will intensify with the completion of the Connector. This growth should be controlled and channeled into the Squire Road Development Area which is presently densely developed and the most urbanized section of the City. In this manner, intense uses can be concentrated rather than promoting a scattering of projects in small upland pockets within the Study Area.

4. Preserve the Character of Existing Neighborhoods within the Study Area

There are four larger residential areas within the CZM Study Area: Point of Pines, Riverside, Oak Island and Upper Revere Street. All of these neighborhoods are stable residential areas of one to two family homes.

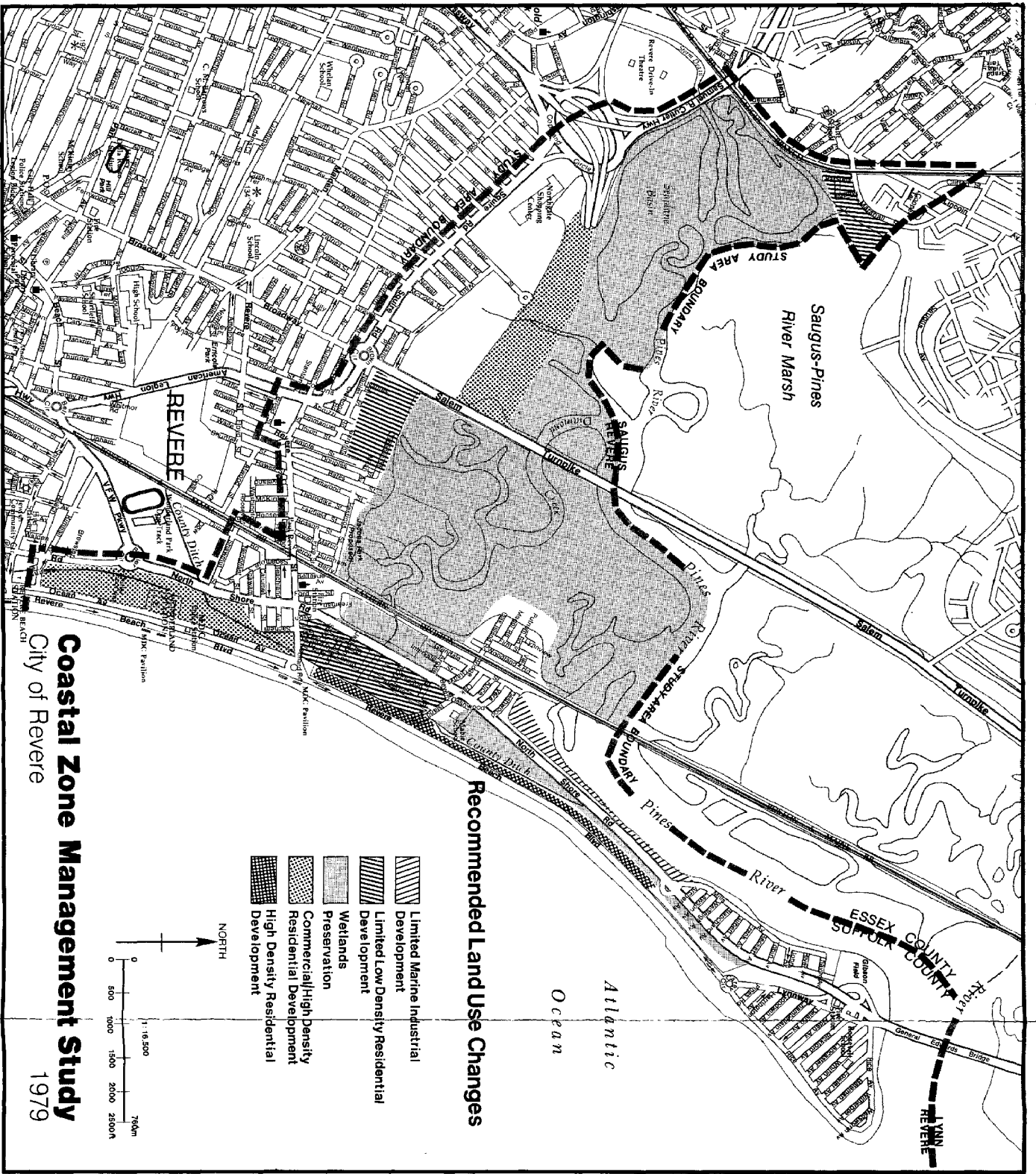
Major public improvements projects such as the MBTA's Blue Line and the MDPW's Connector Road can often change or instigate changes in an existing development pattern. While in some instances this may be a desirable effect, steps must often be taken to avoid this type of impact in other instances.

Changes in these neighborhoods could only occur through redevelopment whether a private or public process. The City of Revere does not advocate any public redevelopment process which would dislocate any families or disrupt any of the neighborhoods. It is doubtful that the Mayor or the City Council cover any extension or support any proposal of this nature from a private developer.

The City should take steps to maintain the character of these areas and to discourage decline or decay of the neighborhoods. Measures which are recommended include:

- a. Public improvements projects including repairs to sewage drainage systems, repairs to seawalls, streets and sidewalks, provision for a tree-planting or tree adoption program for sidewalks, neighborhood parks.
- b. Enforcement of residential zoning and careful scrutiny of any request for zoning variances or special permit within the neighborhood.
- c. Requirements for traffic zones between residential and other more intense areas, (residential or other).

- d. Residential parking sticker programs if desired for neighborhoods so that transit parking would not be allowed in small neighborhood streets.
- e. Strong policy of commercial development in designated areas so that there is no encroachment into existing neighborhoods.



Public Meetings  
To Discuss The  
Coastal Zone Management Study  
For The  
City of Revere

1. City Council, City Hall, February 8, 1979

As a result of the flooding that took place on January 25, 1979, a group of residents in the City petitioned the Council to hold a public meeting at which time there would be an open discussion of the flooding problems in the City of Revere.

The CZM Study staff helped the Council President organize the meeting and invite representatives from various state and federal agencies. In addition, the staff made a presentation on the scope of the CZM Study, and in particular on the proposed study of the Eastern Branch of the County Ditch.

One of the conclusions of the meeting was that there needed to be a comprehensive summary of all of the flood control activities on the City of Revere. The other recommendation relative to the CZM Study was that the engineering recommendations for the Eastern Branch of the County Ditch take into account all of the public and private projects proposed for that drainage basin.



2. Revere Fair Share, St. Theresa's Rectory, March 7, 1979

The Revere Branch of Fair Share asked Mayor George V. Colella and various department heads to attend a neighborhood meeting to discuss flooding problems, drain maintenance, and incremental development of the salt marsh.

Age of the drainage system and poor design were brought up as major problems contributing to flooding of low-lying areas. There was also a discussion of the inappropriate development that has occurred throughout the years in the salt marshes of the City. Many people were surprised to learn that their homes were built on former salt marsh-land and without adequate local drainage or floodproofing.

The question of the cause of the January 15, 1979, flood led to an important digression on the elevation of land in the Revere Beach section of the City. Again, many people were surprised to learn that the homes in the Bay Road area were between 2.5 and 7.0 feet above mean sea level (msl). The houses in the Arcadia-Ellerton Street area are situated between 1.5 and 5.3 feet above mean sea level. Those homes at the end of Sachem Street are only 3.0 feet above mean sea level. At the eastern end of Shawmut Street, along North Shore Road, the elevations run between 2.5 and 3.8 feet above msl.

It was pointed out that the significance of this siting of the houses was that, everytime there was a high tide, basements would get wet.

Poor land use planning coupled with inadequate design and lack of maintenance of the drainage system has resulted in the flooding conditions people encounter today.

The conversation for that evening also covered the drain cleaning program currently being conducted by the City's Department of Public Works. The need to bring in the Essex County Mosquito Control Unit (which has the appropriate equipment for cleaning out the earthen County Ditch system) was pointed out.

Lastly, there was a discussion of the laws which regulate development in wetlands. The performance of the newly appointed Conservation Commission with respect to the enforcement of the Wetlands Protection Act was brought up.

Allegations were made that the City Department of Public Works was violating Chapter 131, Section 40, by dumping in the wetlands.

It turned out that the City DPW was attempting to protect low-lying neighborhoods by creating earthen dikes. While this was being done without a proper Order of Conditions, the intentions were "honorable". The improper legal action will be remedied by increased communication between the City DPW and the Conservation Commission and the filing of a Notice of Intent for actions to be taken by the DPW.

3. Revere Beach Citizens Advisory Committee, Lincoln School,  
May 17, 1979

This citizen's committee, which has been monitoring development on the Revere Beach since 1972, requested the MBTA and their consultants to attend a meeting to discuss the impact of the North Shore Transit Improvement Project (NSTIP) on drainage and traffic circulation in the Revere Beach area.

The charge that the MBTA gave to its consultants (Greiner Engineering and Bryant and Associates) was to design a drainage system that would adequately deal with the run-off from the NSTIP and would replace sections of the ditch system that would have to be moved by the track extension from the Wonderland Station to the Boston and Maine embankment.

While the system that was described was adequate in terms of dealing with the impacts of the improvements to the Blue Line, it did not take into account the Revere Beach Development Project, Revere Beach Reservation Improvements or the Revere Beach Connector. It was stated by the CZM Study Staff, that the City was interested in a comprehensive redesign of the Eastern Branch of the County Ditch based upon all of the proposed public and private projects. Fortunately, the consulting engineers to the CZM study, Richard Downes and Marcus Hann had just completed the first draft of their recommendations for improvements to the drainage system. Consequently, the CZM Study Director was able to give a summary presentation of that study.

The MBTA was asked whether or not they would financially participate in the reconstruction of the Eastern Branch of the County Ditch based on a prorata share which would be determined by the amount of run-off generated by each project.

Mr. Richard Benedetto of the MBTA said that such a strategy was definitely possible, pending joint agreement on the comprehensive design and the prorata share formula. When the CZM Study recommendations have been finalized, there will be a meeting between the CZM Study staff and the MBTA to answer the above-mentioned questions.

4. CZM Citizens Advisory Group, City Hall, June 6, 1979

This meeting was called by the CZM Study staff to present the recommendations for the comprehensive improvements to the Eastern Branch of the County Ditch.

A description of the topography of the area, the history of flooding, causes of flooding and the existing drainage system were given by the CZM Study Director as background to the recommendations. Particular attention was paid to the improper design used in the culverts in the existing system and the problem with maintaining an earthen ditch system. The limits of protection were pointed out. That is, the drainage area in question is basically a bowl. The elevation on the eastern perimeter at Revere Beach Boulevard ranges from 14 to 17 feet above msl. However, the elevation on the western perimeter at the Band M embankment is only 8.3 to 8.5 feet above msl. This means that when the tidal elevation in the marsh surrounding Diamond Creek exceeds 8.3 feet above msl, water will come over the top of the embankment and enter the drainage area. Even if there is a pumping station, the area would experience flooding under the above-described circumstances.

Those homes at the lowest elevation would experience flood damage. Even if the recommendations for the Eastern Branch were implemented, the Mayor and the City Council will have to consider a selective building moratorium for the lowest-lying areas.

In the course of the presentation, it was explained that the assumptions used in deriving the recommendations were the maximum level of development and filling as described in the Final Environmental Impact Statement for the Revere Beach Development Project. This included, the South Lot, Parch H and the North Lot, as well as the Revere Beach Reservation between Beach Street and Revere Street. In addition, the consulting engineers, Downes and Hann, incorporated estimates of run-off from the NSTIP in the drainage area and the improvements proposed by the MDC for a primary and secondary seawall and holding basins which would prevent seawater from entering the City's drainage system.

In short, the assumptions included maximum level of development, the elimination of seawater in the drainage area, and the channeling of the surface run-off from Revere Beach Connector to an ocean outfall in Broad Sound. This latter assumption was based upon the description of the proposed drainage improvements contained in the Draft Environmental Impact Statement for the Revere Beach Connector.

The recommendations for improvement include culverts capable of holding a 10-year storm, either an open paved swail or a box culvert to replace the earthen ditch, additional final culverts and tide gates, a pumping station and a holding basin. The cost for these improvements range from 5.2 million dollars to 6.4 million dollars.

A more detailed description of the proposed improvements is contained in the Downes and Hann report which is part of this chapter.

Two significant review comments were made by members of the CZM Citizens Advisory Committee.

The first comment concerned the location of the proposed holding basin. It was suggested that it be moved as far north as possible, even within the interchange ramps for the Connector. If possible, this would leave a buffer between the houses on Freeman Street and the holding basin.

The second comment suggested that when more information was available from the DPW regarding their proposal for an ocean outfall, that a combined ocean outfall for the run-off from the Connector and the interior drainage water be considered. Both of these suggestions will be explored by the CZM Study staff.

COASTAL ZONE MANAGEMENT

CITIZENS ADVISORY GROUP

Joseph A. LaValle  
41 Bickford Avenue  
Revere, Mass. 02151

Robert J. Furlong  
City Planner  
City Hall  
281 Broadway  
Revere, Mass. 02151

Joseph Festa  
Central Realty Co.  
385 Broadway  
Revere, Mass. 02151

James Gustavson  
11 Putnam Road  
Revere, Mass. 02151

Elyse Cherry  
Revere League of Women Voters  
9 Cummings Avenue  
Revere, Mass. 02151

William Flynn, President  
City Council  
City Hall  
281 Broadway  
Revere, Mass. -02151

Ellen Haas, Chairperson  
RBCAC  
10 Pierview Avenue  
Revere, Mass. 02151

Lester Smith  
Coastal Geologist  
Coastal Zone Management Office  
100 Cambridge Street  
Boston, Mass. 02202

William Clendaniel  
General Council  
Coastal Zone Management Office  
Boston, Mass. 02202

Peter Kortright  
Coastal Zone Management Office  
100 Cambridge Street  
Boston, Mass. 02202

Lilian Carifio  
314 Reservoir Avenue  
Revere, Mass. 02151

Sylvia Blume  
26 Wedsworth Avenue  
Revere, Mass. 02151

Jean D'Iorio  
53 Centennial Avenue  
Revere, Mass. 02151

Dorothy MacDougall  
622 Park Avenue  
Revere, Mass. 02151

SECTION THREE

Implementation Program

Analysis of Existing Land Use  
Management Programs



## Introduction

In order to analyze existing land use management programs in Revere in terms of the planning policies and criteria developed under Revere's CZM community grant project, it is necessary to focus on three areas of concern: existing ordinances as promulgated by the City, the administration of these existing ordinances and controls and the enforcement of these ordinances when violations are detected.

It is stating the obvious to assert that any land management program is only as good as the legal authority under which it operates. No administrative action can legitimately be undertaken unless it is consistent with and authorized by an enabling statute, regulation or ordinance. Enabling authority which attempts to give broad powers and sets few standards can provide flexibility in respond to diverse situations but at the same time is susceptible to abuse and the arbitrary and sometimes unlawful exercise of the discretion it provides. Conversely, enabling authority which is too precise and rigid often fails to equitably provide for the unique situation and oftentimes overlooks significant problem areas. Land management programs in Revere suffer to some extent, from both of these problems.

Once adequate enabling authority is in place the next area of concern is with the administration of this authority. An effective land management program allows for some discretion in its application. Whether this discretion is exercised fairly and evenhandedly with reference to pre-existing standards and policies or arbitrarily, depending upon the whims of the administration should be of utmost concern.

The perceived integrity of the management program influences all who deal with it. Any land management program relies to varying degrees on voluntary compliance. When the program is perceived as a sham, compliance will clearly suffer. However, the honesty and integrity of the administrators is not the only guidepost in determining administrative effectiveness. Adequate funding and staffing of programs is also critical to good administration. Land use management programs can easily collapse under their own weight if support staff is lacking. Moreover, staff must be adequately trained and experienced in order to explain and administer the programs, and must be given the support of other departments and programs to insure that administrative activity is not functioning at cross purposes. While steps have been taken in Revere to improve administrative effectiveness, many areas of land use management appear to suffer from inadequate staffing and lack of coordination.

Finally, the enforcement of land management programs is critical if such programs are to be taken seriously. Violations must be detected, and once detected, enforcement action must be certain and evenhanded, and provide for consistent enforcement priorities. Flexibility must be provided for, in order to vary the enforcement response according to the nature and

seriousness of the violation. Predetermined enforcement priorities provide the best assurances that enforcement will be flexible yet evenhanded. Enforcement offices must be adequately staffed and trained and cooperative relations between administrative officials and enforcement officials must be maintained.

Enforcement of land use management programs in Revere has been subject to recent criticism by both state and city officials.

The preceding discussion highlights the areas of concern in this analysis of Revere's land management programs. The following analysis will deal with each of these areas of concern (legal authority, administration, enforcement) in terms of specific land use management programs (i.e. zoning, subdivision control, wetlands protection, public health, sewer use, etc.). Readers should be aware that the discussion focuses on problems within the Revere CZM project area, and is by no means an exhaustive analysis of all land use management problems within the City. However, with the possible exception of zoning, land use controls should be applied uniformly city-wide, so that a discussion of land use management broken down by project area or sub-area would be overly repetitions. Unless otherwise noted, the problems and illustrations presented in this report all related to the Revere CZM project area (see map).

## I. ZONING

### A. Legal Authority

Revere's Zoning Ordinance, Chapter 21 of the Revised Ordinances of the City of Revere, was adopted by the City Council on July 26, 1971. It has been amended on a few occasions since 1971. The most significant amendments include the creation of a General Commercial A District in 1977 and revisions effective July 1, 1978, accepting Chapter 40A of the Mass. General Laws, as amended by Chapter 808 of the Acts of 1975, and subsequent amendments.

The ordinance originally created nine districts, and now has ten with the addition of the abovementioned General Commercial A District.

The ordinance is straightforward and standard, containing articles governing, among other things, uses, height and area, accessory uses, nonconforming uses, parking requirements, exceptions and appeals. The ordinance contains none of the more innovative types of zoning controls found in many of the zoning by-laws of eastern Massachusetts communities, such as cluster zoning or PUD districts, performance standards, site plan reviews, or wetland and flood plain districts. The ordinance is out of date, and owing to attempts to revise it to make it consistent with the state zoning act, confusing and sometimes inconsistent. The City should consider a comprehensive revision of this important city ordinance.

In terms of the policies being proposed under this Revere CZM project the zoning deficiencies lie in two major areas:

1. The failure of the ordinance to address the City's flooding and drainage problems, and the related problem of protection of the City's natural resources; and
2. The confusing and incomplete provisions relating to the issuance of special permits and exceptions under the ordinance.

In Massachusetts over 200 communities now have established some sort of local land use control over the development of flood plains. This number will increase as more communities come into the "regular" phase of the HUD Flood Insurance Program.

Revere will enter the "regular" phase when HUD "rate maps" are completed. These "rate maps" should be available by the fall of 1979. The rate maps show the base level of the 100 year flood and the "regulatory" floodway which will carry the flood with no more than a one-foot rise. A community wishing to continue participation in the HUD flood insurance program must adopt land use regulations forbidding filling or building within the "regulatory floodway" and require that buildings in the rest of the floodplain be elevated (if homes) or floodproofed. Homes in the areas impacted by coastal storms must be specially constructed with "breakaway" fronts. Barriers

beaches must not be built upon. While the rate maps are not yet complete it is clear that most of the Revere CZM project area will fall within the 100 floodplain and the "regulatory floodway". In order to continue to qualify for subsidized flood insurance rates Revere will have to adopt some form of floodplain zoning which meets the HUD requirements.

Zoning by-laws in Massachusetts cities and towns must be consistent with Chapter 40A of the Massachusetts General Laws (the Zoning Act) Chapter 808 of the Acts of 1975 subsequently amended Chapter 40A. While the new act does not attempt to limit the purposes of zoning, reflecting, the increased power of cities and towns under the Home Rule Amendment to the Massachusetts Constitution, it does suggest objectives for which zoning could be established. These include the conservation of health, securing safety from flood and other dangers; the prevention of the overcrowding of land to avoid undue concentration of population, facilitating the adequate provision of water supply, drainage, sewerage, open space and other public requirements, the conservation of natural resources and the prevention of blight and pollution of the environment; and the encouragement of the most appropriate use of land including consideration of the recommendations of the master plan, if any, adopted by the planning board. (St. 1975 C. 808, S. 2A) In light of these expanded objective, the establishment of zoning districts for the protection of floodplains and wetlands must be considered a legitimate use of the zoning power. In Golden V. Falmouth (358 Mass 519, 1970) and Turnpike Realty Co. V. Town of Dedham (362 Mass 221, 1972), both decided prior to the passage of Chapter 808, the Supreme Judicial Court of Massachusetts recognized that flood control and wetlands regulations are within the municipal "police power" to regulate for the protection of health, safety and welfare. The court in the Turnpike case held that "the general necessity of floodplain zoning to reduce the damage to life and property caused by flooding is unquestionable. The floodplain district boundaries must, however, be shown on the City's zoning map and must be backed by historical or engineering data.

Other legal issues relating to floodplain zoning will be discussed in the report dealing with new implementation techniques. The preceding discussion has sought only to set out the need for floodplain zoning in Revere and the legality of such zoning. The recommendation is that some form of wetland/floodplain is necessary in Revere because of the City's drainage and flooding problems, and the failure of the existing zoning ordinance to deal with these problems. The ordinance once contained vague language that would have allowed the refusal of a permit "(i) if a use otherwise permitted could cause injury to property or be detrimental to community..." (Sec. 21-6, prior to amendment). This language granted discretionary powers to the Building Inspector which were clearly too broad. This language was rightfully deleted, but as a result, the ordinance provides even fewer tools to control building in flood prone areas. Clearly, some form of floodplain zoning is necessary in Revere, if not to protect the public health, safety and welfare, then at least to insure the availability of federal assistance when a flood disaster does occur.

The second area of concern in Revere's zoning ordinance deals with the confusing and incomplete provisions relating to the issuance of special permits and the allowance of exceptions under the zoning ordinance. As stated before, Chapter 808 of the Acts of 1975 substantially amended Chapter 40A of the General Laws, the state zoning act. The zoning act is designed to provide standardized procedures for the administration and promulgation of municipal zoning laws. The issuance of special permits is one of the areas where it provides for standardized procedures. In amending Revere's zoning ordinance to bring it into compliance with state law an attempt was made to graft these new procedures onto existing procedures. The amendment created a few areas of confusion over exceptions and variances to the zoning ordinance. This is indeed unfortunate since exceptions and the rezoning of areas in the City may already be the primary problem in the administration of the City zoning law. New confusion can only create further problems.

Prior to the amendment of the ordinance in 1978 there were two methods of obtaining relief from requirements of the ordinance (other than rezoning the area). The first was through an exception to district regulations, granted by the municipal council in order to "(Permit certain uses of buildings, structures on land in apartment houses, general commercial and light industrial districts)" and to "permit certain other special exceptions as specified in section 21-29 [(section 21-29 (a) (1) and (2))] since 21-29 did not specify other districts its only application could be in apartment house, general commercial and light industrial districts.

Variances could be issued under the zoning ordinance by the Board of Appeals after public notice and hearing, where public convenience and welfare would be substantially served; the exception would improve, the status of the neighborhood; and where the variance was in harmony with the general purpose and intent of the ordinance. The Board of Appeals could:

- a) permit the alteration of a one family house to a two family,
- b) issue conditional permits for temporary structures,
- c) permit variations authorized by Chapter 40A of the General Laws,
- d) permit front yards of less than twenty feet (sec. 21-33).

In 1978, the amendment of Revere's zoning ordinance added twenty-eight, among other things, new provisions dealing with the issuance of special permits and variances. It did not delete or substantially revise either of the abovementioned mechanisms. Both new provisions were written to comply with Chapter 808. As zoning must be reviewed by the Attorney General to insure compliance with the state zoning act it must be assumed that these amendments were approved by the Attorney General.

However, neither provision provides for notice to be sent in mail, postage prepaid, to those persons having an interest in the proceedings, including the applicant, abutters, owners of land directly opposite on any public or private street or way and owners of land within 300 feet of the property line as required by Chapter 40A, Section 11 of the General Laws, as amended by Chapter 808 of the Acts of 1975.

With respect to other specific problems with the new special permit provision (section 21-2, as amended 7/1/78), the section states that "The procedures of Sec. 21-29 (exceptions) shall be incorporated in the granting of special permits". This seems to imply that both procedures must be complied with. The requirements for an exception under Sec. 21-29 do not mirror the requirements for the grant of a special permit under section 21-2, as amended, and as required by Chapter 40A of the General Laws. For example, a 2/3rds vote of the City Council is only necessary to grant an exception under Sec. 21-29 where a written protest is filed by twenty percent of the adjacent landowners. All special permits require a 2/3rds vote of the City Council. Does this mean that a landowner may obtain an exception under Section 21-29 by a majority vote of the City Council where there is not neighborhood protest? It is suggested that such a procedure would violate the state zoning act, as being in fact an issuance of a special permit without complying with the special permit provisions of the state zoning act.

Moreover, the special permit provision (section 21-2 as amended 7/1/78) provides few standards for the special permit granting authority (the City Council) to apply. While the legal requirements authorizing the grant of a special permit are quite liberal, requiring only that the uses are in harmony with the general purpose and intent of the ordinance, and subject to general or specific provisions set forth in the ordinance, courts have required more. The Massachusetts SJC has held that the provisions of the local ordinance set forth sufficient and adequate standards for guidance for the authority in deciding whether to grant or withhold special permits. MacGibbon v. Board of Appeals, Duxbury, 356 Mass. 63S, 638 (1970). A zoning by-law which is so vague and ambiguous that its meaning can only be guessed at is void. Berliner v. Feldman 1973 AS 955.

Aside from the legal problems, there are sound planning and environmental reasons why special permit standards should be detailed in the ordinance. Much of the Revere Beach area is currently zoned in such a manner that revitalization projects which the City desires are not permitted by right. Height restrictions for apartment house districts for example are generally below project proposals. If floodplain zoning is adopted, some form of special permit provision should be included to allow compatible types of development which would improve the City's tax base. Aside from that the wide discretion given the City Council to grant special permits may be legally impermissible, this discretion does not insure that, in every instance, the economic, social and environmental interests of the City are protected. Detailed standards, adopted after input from all municipal agencies and interests, would insure that all City concerns are addressed in every special permit proceeding. Such standards, for example, would be an excellent place to impose requirements that drainage from new projects does not exacerbate the City's flooding problems. Specific standards could insure that factors such as the placement of buildings and utilities surface and groundwater drainage, water supply, access, parking, loading, landscaping, lighting; dust and noise control, environmental damage and off-site impacts are considered.

Of course, even more innovative types of zoning controls such as cluster zoning and PUD districts, performance standards and development rights transfers could be included in special permit requirements. These issues will be addressed in a subsequent report. The purpose of this report is only to note deficiencies in the existing system.

The variance provision in the zoning ordinance added by the 1978 amendment (Section 21-33 as amended 7/1/78) contains the abovementioned notice problem and one other possible problem area. Under Chapter 40A section 10 of the General Laws, as amended by Chapter 808 of the Acts of 1975 a use variance, as opposed to a variance from a dimensional or density requirement, is only allowed where specifically permitted by the City's ordinance. No such specific permission is given in Revere's amended ordinance. This may not be an omission, but rather the precise intent of the City Council in adjusting the ordinance. In any event, the questionable legal validity of any use variance granted by the Board of Appeals should be noted.

Other recommendations for changes to the zoning ordinance include changes to the dumping, filling, and earth removal provisions, additional parking requirements and prohibitions on the storage of hazardous materials.

Unlawful dumping has been repeatedly cited as a problem in most of the Revere CZM project area. It is not suggested that an improved zoning ordinance would solve this problem, but rather that the zoning ordinance work in conjunction with other municipal regulatory measures. Revere's zoning ordinance allows land in light and heavy industrial districts to be used as "a public or private dump or place of depositing abandoned property and refuse" (Sections 21-16(4)(b) and 21-17). To do so a permit must be obtained from the City Council, which must first hold a hearing and give appropriate notice (note: wrong reference to new zoning act), and if the planning board does not approve of the permit then the City Council can only approve the issuance of such a permit upon a 2/3rds vote (Section 21-16 (4)(c) and (d)).

These provisions provide additional areas of conflict with the special permit provisions of the state zoning act. Moreover, they add further permit procedures to those that are administered by other City agencies under separate authority, including the Board of Health, and the Conservation Commission.

Another section of Revere Zoning Ordinance allows earth removal operations to be conducted upon issuance of a permit from the Board of Appeals. (Section 21-31) Here again, another special permit procedure is spelled out, and another arm of City government is involved in permitting.

It is recommended that one of two possible courses of action be taken. Either all special permits be included in and subject to the special permit section (Section 21-2) which complies with the state zoning act, or earth removal permits and dumping and filling permits be removed from the scope of the zoning ordinance, and dealt with by a separate municipal

ordinance. A separate earth removal, dumping and filling ordinance could coordinate all municipal permit granting actions, and would not be restricted in scope or procedures by the state zoning act.

In a related area, the storage of hazardous materials is not specifically prohibited in light of heavy industrial districts. It should be so prohibited. If it is allowed at all it should only be by special permit.

Finally, parking requirements (Section 21-28A) should contain provisions which will insure adequate drainage without increasing flooding problems.

#### B. Administration

The City's Building Inspector is currently primarily responsible for compliance with the zoning ordinances. He is also responsible for compliance with the state building code which governs materials and methods of construction used in building as was mentioned previously. Major problems in the administration of the City's Zoning Ordinances are caused by the large number of exceptions, special permits and variances to the zoning ordinances, as well as the rezoning of small areas within the City. It is sometimes impossible to determine what zoning applies in certain areas because of the exceptions which have been granted. With the new special permit authority added last spring, it is likely that there will be more exceptions in the future.

It has been suggested by City officials that the creation of a new post of Zoning Administrator could help resolve some of this confusion. The Zoning Administrator would be responsible for compliance with the zoning ordinance. He would work closely with the building inspector to insure that proposed building, repairs and alterations complied with the applicable zoning requirements.

The Zoning Administrator would catalogue and index all exceptions, special permits, variances and rezonings for reference purposes, and would also provide administrative and technical assistance to the City Council in the issuance of special permits to insure that the procedure requirements are met, and that the permit is in harmony with the general purpose and intent of the zoning ordinance. The Zoning Administrator should have good administrative skills as well as a strong background in zoning and land use control.

Under the state zoning act, Chapter 40A of the General Laws as amended by Chapter 808 of the Acts of 1975, the Building Inspector is retained as the party in the first instance charged with the enforcement of the zoning ordinance. This is because the issuance of a building permit is the first and best opportunity to review building proposals for compliance with the zoning ordinance. It is not suggested that this procedure be varied in Revere, but rather that the Zoning Administrator work with the Building Inspector to insure that a proper review is made.



Chapter 40A, Section 13 permits the creation of the position of Zoning Administrator. His function is to decide appeals which would otherwise be heard by the Board of Appeals, which include appeals from administrative action, requests for variances and requests for special permits. If the position is authorized by the zoning ordinances, the individual is appointed by the Board of Appeals subject to confirmation by the City Council. The individual serves at the pleasure of the Board of Appeals. Any decision appealed to the Zoning Administrator not acted on within 35 days of filing would be deemed denied. Any decision of the Zoning Administrator can be appealed within thirty days to the Board of Appeals.

#### C. Enforcement

Here again the primary problem lies in the large number of exceptions, variances, special permits and rezonings which have occurred. Records of these actions are sketchy at best, and therefore enforcement is uncertain. A complete revision of the City zoning ordinance as well as the creation of a Zoning Administrator position would do much to resolve this problem, and provide a more definite record upon which enforcement action could be based.

Section 21-6 of Revere's zoning ordinance, as amended, states that:

"To aid the Building Inspector in his work, it shall be the duty of every police officer to know that all work on buildings on his beat is being done under a proper permit and to notify the building inspector if it is not being so done."

It is suggested that additional attention to this provision as well as other municipal land use control ordinance by the police department could greatly assist in solving many of Revere's land use control problems. A memo to police officers reminding them of their responsibility to check for valid building permits and wetlands permits would provide better zoning enforcement, and could aid in stopping illegal dumping and filling in the City. A training program for police officers in the areas of zoning, health and wetlands enforcement may be necessary to effectively implement such increased monitoring.

## II. HEALTH REGULATIONS

### A. Legal Authority

Under Chapter 111 of the General Laws, Municipal Boards of Health are given broad powers. The board consists of three members, appointed by the City Council.

Municipal Boards of Health are charged with the enforcement of many state statutes dealing with public health. They enforce the provisions of state sanitary and environmental codes, and can impose more stringent regulations when local conditions require them. They may make and enforce regulations relative to house drainage and connection with common sewers (G.L. C. 111, S. 127). They assign sites and monitor the operation of any "sanitary landfill, refuse transfer station, refuse incinerator, refuse composting plan, dumping ground for refuse, or any other works for treating or disposing of refuse" (G.L. C. 111, S. 150A). They may assign locations where offensive trades or employment which may result in a nuisance, be harmful to the inhabitants or dangerous to the public health can only be carried on; (G.L. C. 111, S. 143) and they may make "reasonable health regulations", including regulations on sewage disposal and regulations necessary to remove or prevent nuisances (G.L. C. 111, S. 31). The Board of Health also plays an important role in the subdivision approval process, and in the issuance of building permits.

The Board of Health may adopt regulations by a vote of the board, and the regulations become effective after publication, once, in the newspaper of the municipality (G.L. C. 111, S. 31).

In Revere, the Board of Health is given all powers vested in the City Board of Health under the General Laws, and is authorized to "make such regulations as it deems wise regarding inspection and sale of ice and milk for domestic purposes, and shall perform such other duties as may from time to time be prescribed by the Mayor and the City Council". (Section 2-79 of the revised ordinances of the City of Revere.) The Revere Board of Health has intensive regulations governing all areas of its jurisdiction from the sale of milk to the regulation of shellfisheries.

In terms of the scope of the Revere CZM project, and the land use management problems encountered in the project area, the major focus of interest is with health regulations governing dumping and drainage. Section 9 Rule 16 of the regulations of the Revere Board of Health states that: "No person shall throw into or leave in or upon any public or private way, or place, public enclosure, dumping ground vacant lots, flats or any pond or tidal or other water within this City any dead animals, manure, oyster, clam or lobster shells, waste water or filth of any kind, or any refuse of animal or vegetable matter whatever."

Rule 14, Section 8 and 9 requires that any person wishing to use any premises within the City as a dump or fill area for ashes, refuse, dry waste, rubbish or other material obtain a permit from the Board of Health. Other provisions of the regulations govern littering from a public highway or within twenty yards thereof, or on private property, with a \$50.00 fine and suspension of driving license possible (Rule 14, Section 11), dumping on land of another without consent of the landowner and Board of Health (Rule 14, Section 12) and depositing waste material for the purpose of filling, without Board of Health permission (Rule 14, Section 13). The owner of land is at all times responsible for its condition and may be ordered to remove any filth or rubbish of any kind by the Board of Health. (Rule 14, Section 12 and Rule 16 and Section 1).

There is no question that there is adequate jurisdiction for the Board of Health to deal with most types of illegal dumping, and to require the clean up of same. Improvements to the present program could be made primarily in the areas of administration and enforcement. However, as was noted previously, because of the magnitude of the illegal dumping problems in Revere, a new City ordinance dealing solely with dumping, filling and earth removal should be considered.

Such an ordinance would set forth the responsibilities of involved city agencies and insure that permit and enforcement procedures were coordinated. It need not limit the authority of any agency currently with jurisdiction over dumping. City agencies could thereby be assured that they were working together and not act at cross purposes. If such an ordinance was adopted then the Board of Health Regulations governing dumping should be revised to comply with it.

The second area of concern in the Health regulations vis a vis Revere's CZM project is in the drainage of lots and land within the City. The regulations require that owners of land remove waste or stagnant water from their premises when ordered to do so by the Board of Health (Rule 16, Section 1). Rule 19 deals with house drainage and concerns itself more with connections to sanitary sewers and cesspools and septic tanks than with the drainage of water from lots. While Rule 41, Section 1 states that "No building permit shall be issued for any building until the Board of Health has approved the proposed lot or site as suitable from a sanitary point of view for human habitation or occupancy", there are no provisions relating to the drainage of rainwater, floodwaters or waters from other sources.

It appears that the drainage of lots is an area which is overlooked in most of Revere's relevant ordinances. Zoning controls, subdivision regulations and health regulations do not substantially deal with the issue.

In a community which suffers from severe drainage and flooding problems it seems incumbent on all city department and agencies with the necessary authority to carefully review each building, development and

land use proposal in terms of its drainage impacts. To do this effectively, adequate standards, regulations and procedures must first be adopted.

It is recommended that Rule 41 and 19 be amended to substantively deal with the problem of surface water drainage. The proposed drainage of the lot should be carefully reviewed against adopted standards in every review by the Board of Health of building permit applications. In addition, where drainage problems exist in developed areas, the Board of Health should be specifically authorized to order that corrective and maintenance measures be undertaken in order to prevent or remove public nuisance conditions.

An additional area where Board of Health regulations could be improved is in the storage, disposal and transport of hazardous materials.

Rules 21 and 22 governing nuisances and offensive trades and occupations should be amended to provide for controls and the issuance of permits to anyone transporting hazardous materials, including toxic chemicals and flammable materials.

#### B. Administration

Revere's Health Department appears to be adequately staffed with competent people. However, the chief health agent is the only person doing work relative to dumping and drainage problems. Increased City surveillance to crack down on illegal dumping could be handled in a number of ways. An additional health agent could be employed to assist in detection and enforcement. The work of the Health Department and the Conservation Commission could be better coordinated for maximum effectiveness and use of available personnel, or, as mentioned previously, the police department could become more involved in detecting illegal dumping and enforcing municipal ordinances against such dumping.

If stricter drainage regulations are adopted, more personnel may be needed to adequately administer and enforce such regulations. An individual with a background in civil engineering and hydrology could assist in the administration of the drainage requirements, and also provide other departments and boards with needed expertise.

Finally, consideration should be given to requiring that all dwellings abutting a common sewer be required to tie into that sewer. Currently only dwellings which are experiencing problems with on site systems are required by the Board of Health to tie in. While this may appear to be a costly requirement for landowners at this time, when the City begins to charge customers on the basis of sewer use, as it will be required to by MDC and the EPA (see section on sewer use regulations), this requirement will insure that landowners benefitting from the availability of sewers pay for those benefits.

### C. Enforcement

Here again, backup by the police department could greatly assist in identifying illegal dumping situations and bringing enforcement actions. It has been suggested that the only measure which would stop the illegal dumping in the City is the construction of barriers in those areas prone to dumping. However, there is an alternative to building walls around the areas where illegal dumping occurs, i.e. the marshes and wetlands. A strong city-wide enforcement program, coupled with a public information program to educate the public on the extent of the problem, and the penalties for noncompliance may help change the perceived public attitude that dumping is done by everyone, including the City, and is therefore acceptable. It is time for the City to actively and publicly address the problem, if Revere is to cease being the area's dumping ground.

An additional enforcement problem that has been noted is the lack of legal backup when violations are noted. In the past, City departments were often represented in court by public officers with no formal legal background or knowledge of public health statutes and issues. The outcome of such proceedings often went against the City because of failure to comply with necessary administrative procedures or unsympathetic judges not being convinced of the public interests in the enforcement of the municipal ordinances. The City Solicitor's office states that it now becomes involved in every major enforcement action taken by the City, and that police prosecutors are no longer used in such situations. If so, then the initial criticism seems to have been addressed, and no further recommendation is necessary.

### III. SUBDIVISION REGULATIONS

#### A. Legal Authority

The present rules and regulations for subdivision of land in the City of Revere were adopted by the Revere Planning Board in 1960. These subdivision regulations were adopted under the authority of Chapter 41, Sections 81k-81 66 of the general laws. Otherwise known as the Subdivision Control Law. Since 1960 various provisions of the Subdivision Control Law have been amended and changed. Additionally, case law since 1960 has further defined various procedures; responsibility and the scope of the law have been amended and changed. Since 1960, through a period that has undergone what has been called a "quiet revolution in land use control" the rules and regulations for the subdivision of land in Revere have remained unchanged.

Under Chapter 41, Section 81m of the General Laws, the Planning Board, in evaluating proposed subdivisions of land, must regulate the construction of ways and ensure sanitary conditions. The Board is given the power and duty to adopt subdivision regulations governing design and construction of ways, drainage and utilities. So long as the regulations on these subjects do not conflict with the local zoning code or the requirements of other boards they will be presumed valid and afforded great weight if challenged in court. However, at least one court has strictly construed the legislative statement of purpose of the law, stating that: "The only purposes recognized are to provide suitable ways for access; furnished with appropriate municipal utilities and the secure sanitary conditions". Daly Construction Co., v. Planning Board of Randolph, 340 Mass. 149, 153. Regulations which insured the adequate drainage of the locus have been held to be within the scope of the law. United Reis Homes, Inc. v. Planning Board of Natick. This type of regulation has been allowed even where it involved the "natural drainage" of the locus. Hamilton v. Planning Board of Lexington, 1976 Mass. App. Ct. Adv. Sh. 506, 507. In addition, in a recent decision the Massachusetts Supreme Judicial Court upheld the right of a Planning Board through its subdivision regulations, to seek information on the impact of the subdivision on town services, even though its stationary authority does not permit it to deny a permit on the basis of the information gathered, provided that the information is reasonably necessary to enable the board to carry out its duties. Loving Hills Developmetn Trust v. Planning Board of Salem, 372 W.E. 2nd 775.

Revere's subdivision regulations do not run the risk of being held invalid because they require too much information. Rather, they can be said to require and import the least amount of information possible. Time frames and notification procedure bear little resemblance to those in the subdivision control law. For example, under the Planning Board's regulations the Board must act on the preliminary plan within thirty days after it has received the plan and requires only that a sketch of the preliminary plan be presented to the Board of Health for their approval. Under the state enabling act (Chapter 41, Section 81 of the General Laws) both the Planning Board and the Board of Health must be given a copy of the plan, and both boards must respond within 60 days.

Since no time period is given for Board of Health action on the preliminary plan under the subdivision regulations it is assumed that they have the statutory 60 days period in which to respond. However, under the regulations, the Planning Board must make up its mind within thirty days. It is commendable to attempt to speed up the permitting procedures, but it should not be done when administrative confusion will result. The procedures under the regulations for approval of the definitive plan are even less well defined. It is assumed that in the absence of definitive time periods and procedures in the regulations, that the state subdivision control law would be referred to. Unfortunately, under such a system administrative errors are more likely to occur, invalidating the whole approval process.

In terms of the substantive information requirements of Revere Rules and Regulations for the subdivision of land, little is required. For example, very little drainage information is required other than the proposed drainage be shown. Runoff coefficients apparently need not be calculated. Wetlands, or other water bodies need not be shown. Base flood elevations need not be shown. Impacts on municipal services do not have to be described, and information on the physical environment and surface and subsurface soil and water conditions need not be provided. The subdivision control law does not necessarily require this information, but, as noted above, such requirements are allowable, and they would certainly aid the City in making an informed decision concerning a particular development.

It is recommended that Revere consider a complete revision to its subdivision rules and regulations.

#### B. Administration

The Revere planning department recognizes the shortcomings of the existing regulations and apparently agrees that revisions are necessary. Where the tools are limited, effective oversight of subdivision development becomes difficult if not impossible. Insufficient standards and regulations can only lead to insufficient administration.

#### C. Enforcement

Little information is available concerning enforcement of the subdivision regulations. Given the regulations one can only assume that enforcement would be difficult.

#### IV. SEWER USE REGULATIONS

##### A. Legal Authority

In the City of Revere the common sewers are controlled by the Department of Public Works. The Department is under the supervision of a superintendent who is appointed by the Mayor, subject to the approval of the City Council. The superintendent is authorized, subject to the approval of the Mayor, to establish rules for the conduct of his department not inconsistent with law or ordinance (Sec. 2-31/5 of Revere's Revised Ordinances). Under state law, a city may prescribe "rules and regulations regarding the use of common sewers to prevent the entrance or discharge therein of any substance which may tend to interfere with the flow of sewage or the proper operation of the sewage system..."(G.L. Chapter 83, Section 10). Municipalities are also allowed to "make such orders, and by-laws, not repugnant to law.. for regulating, under a penalty not exceeding fifty dollars for such offense, the use of common sewers..." (G.L. Chapter 40, Section 21(6)).

While municipalities are by statute, allowed to adopt sewer use regulations, recent developments in federal and state law actually require such regulations for certain communities. A community or public agency which is receiving federal construction grant funds for wastewater treatment facilities is required to show that it "has made adequate provisions for assuring proper and efficient operation..." (Sec. 204(1) (4) of the federal Clean Water Act). Additionally, General Conditions 2D of the NPDES permits issued under the Federal Clean Water Act to the operators of publicly owned treatment works in Massachusetts requires the permittee to have in effect a sewer use ordinance which, at a minimum:

1. Prohibits a major contributing industry from discharging any incompatible pollutants in an amount in excess of that allowed under EPA pretreatment standards, and
2. Requires all major industrial discharges to perform such monitoring of its discharge as the permittee may reasonably require.

Revere is currently rehabilitating its sewerage system with EPA grant funds, and is also a member of the Metropolitan Sewerage District of the MDC. The MDC is involved in extensive improvements of its facilities, using EPA funds, and is therefore required to comply with federal requirements for sewer use ordinances and also use charge requirements. The MDC has the power to adopt reasonable rules and regulations covering the discharge of sewage, drainage, substances and waste into its system (General Laws, Chapter 72 SS2, 8A). It also has the authority to require that any municipal user of the system meet any applicable federal or state law regarding toxic or pretreatment standards (General Laws, Chapter 92 and 6A, as amended by Chapter 814 of the Acts of 1975). Under MDC "Rules and Regulations covering discharge of sewerage, drainage, substances, or wastes to sewage works within the Metropolitan Sewerage District" (effective August 3, 1978) every municipal member of the MDC must "have in effect a



sewer use by law or ordinance no less stringent than the regulations of the Commission itself pertaining to sewer use, together with procedures and adequate resources for monitoring and enforcing compliance with such by-law or ordinance" (Article II, Section 3). MDC's regulations contain, among other provisions, a detailed list of prohibited wastes.

Revere's Revised Ordinances governing the use of sewers are not as stringent as the MDC sewer use regulations. According to the MDC's agreed timetable with the EPA, acceptable municipal ordinances must be in place by September 1979. These ordinances must also be approved by the Massachusetts Division of Water Pollution Control. It is recommended that Revere begin the revision of its sewer use ordinance in order to comply with federal and state requirements.

A related issue in EPA's requirement that recipients of EPA construction grants adopt a system of use charges in which each user of the system pays "its proportionate order of the costs of operation and maintenance (including replacement)... (Section 204(b)(1)(A) of the Federal Clean Water Act).

1977 amendments to the Clean Water Act allow the use of dedicated ad valorem taxes where the applicant for EPA funds has previously used such a system and the administration determines that the applicant has a system of charges which results in the distribution of operation and maintenance cost to each user class in proportion to the contribution to the total cost of operation and maintenance by each user class. Such a dedicated ad valorem tax system can only be used for a residential user class and certain small non-residential users.

The MDC currently assesses operation and maintenance costs to member communities by a system based on population and population equivalents, pursuant to Chapter 814, Section 6 of the Acts of 1975. A study is presently being conducted by the MDC which is designed to assist communities in meeting the federal user charge system requirements. The MDC looks for acceptable systems to be in place by September of 1979.

As the adoption of a user charge system by the City is likely to take some time, the City should immediately determine whether it would qualify under the ad valorem exemption, and if not, begin working towards the adoption of a sewer use charge system which meets federal requirements.

#### B. Administration

Significant administrative changes in regard to sewer use are likely to impose additional burdens on the Public Works Department. A review of the Department's staffing and administrative needs should be undertaken to determine where additional staff may be necessary, and more formalized administrative procedures adopted.

### C. Enforcement

As sewer use standards become stricter, enforcement issues will become more complex, and formal enforcement proceedings will become necessary in some instances. The staff of the Public Works Department should be involved in the adoption of any new sewer ordinance to insure that they understand its provisions and procedures.

In a related issue, the City of Revere has experienced difficulties regarding proposed new connections to its system as of late. The problem stems from the sewer connection ban imposed on the City by the Massachusetts Division of Water Pollution Control. The state clearly has the power to refuse to allow new hookups to overloaded public sewers (General Laws, Chapter 21, S. 43). Problems have arisen when the City denies the issuance of permits (such as building permits) based on this state ban. The legal authority of the City to take this action is questionable. Language in a case involving the municipal denial of a sewer connection indicates that such a connection need not be permitted when it would "overload the owner and risk serious flooding and drainage danger and risk of injury to persons or property..." Clark v. Board of Water and Sewer Commissions of Norwood, 234 N.E. 2d 893. However, in the absence of such a finding, the connection must be allowed, and, even if such a condition did exist, it is uncertain whether it could be used to deny other types of permits. If the City wishes to continue to deny such permits, rather than rely on state denial of connection permits, it should adopt a sewer or building moratorium, reasonable in length and scope and aimed at an interim solution to a matter of genuine planning significance.

## V. BUILDING CODE

### A. Legal Authority

The City of Revere uses the "BOCA Basic Building Code" as do all cities and towns in the Commonwealth, as required by state law, G.L. Chapter 143). This code has been formally adopted by the City, except for such portions as are deleted, modified or amended by Section 5-2 of Revere's Revised Ordinances. The modifications allow ordinary repairs to buildings to be made without application or notice to the building official, with certain exceptions (Sec. 102D of BOCA Code).

The BOCA Code requires that buildings in floodplain areas meet certain floodproofing design requirements (Section 748 of State Building Code). In general, these requirements mirror HUD Flood Insurance Program requirements. That is, dwellings must be elevated above the base level of the 100 year flood, and that other buildings be floodproofed.

At the present time no recommendations are made for changes in the BOCA Code, or in modifications to it made by the City of Revere.

### B. Administration

These are some areas of concern regarding Revere's administration of its building code. Portions of the City were severely damaged in the winter storm of 1978, and in flooding occurring in the early winter months of this year. It appears that some rebuilding and new building in floodprone areas of Revere does not comply with BOCA requirements for building in floodplains. The City is taking a lenient position with regards to rebuilding efforts, which is understandable and equitable.

The short term good, however, may result in long term problems. At any rate, there seems to be a little justification for allowing new building, whether apartment, commercial or single family residential to avoid strict compliance with floodplain building requirements.

One problem, of course, is that no one is sure of the base level for the 100-year flood at this time. Once the HUD "rate maps" are completed for the City this level will be known, and hopefully, enforcement of stricter compliance will be possible.

While the flexible administration of any land use management system may increase its fairness and equity, it is preferable that discretion be exercised with reference to preexisting standards and policies, and not solely on a piecemeal, case by case basis. The condition under which rebuilding or new building will be allowed in floodprone areas should be based on city policy, adopted after input from all interested agencies, departments and individuals.

### C. Enforcement

If the issue of building in floodprone areas is considered more one of administration than enforcement then, in terms of the Revere CZM project area, the remaining enforcement issues concern the denial of building permits based on sewer hook-up bans and the City's moratorium on commercial development in the area between Oak Island the the Point of Pines. The problems arising from the denial of building permits because of the state's sewer ban was discussed previously.

It appears that the City Council, some three years ago, enacted a moratorium on commercial development from Oak Island to the Point of Pines. Since it apparently has not been repealed it must be assumed that it is still in effect. Whether or not it is legal is another question.

As noted previously, a building moratorium is likely to be upheld in Massachusetts if it is reasonable in length and scope, "aimed at an interim solution to a matter of genuine planning significance," and if the City proceeds to do the necessary planning, Collura v. Arlington, 1975 Mass. Adv. Sh. 1753. The mechanism should only be used under extreme circumstances, for a short period of time (2 years in Collura), while a bonafide planning effort is carried out. As the court stated in Collura "Interim zoning can be considered a temporary device in the process of plotting a comprehensive zoning plan to be employed to prevent disruption of the ultimate plan itself." Any building moratorium should be enacted as an amendment to the local zoning ordinance. The procedures in the adoption of the Revere moratorium on commercial development are unclear, but it does not appear to have been adopted as a zoning amendment. It is therefore unlikely that it is a legally enforceable moratorium.

The City should consider what interim course it wishes to take in the area from Oak Island to the Point of Pines, and the area where the sewer system is currently surcharged and new connections will not be allowed until it is rehabilitated. A new, legally enforceable sewer or building moratorium will preclude additional legal difficulties during this interim period.

## VI. WETLANDS PROTECTION

### A. Legal Authority

Under the Wetlands Protection Act (General Laws, Chapter 131, Section 40) the Revere Conservation Commission (appointed by the Mayor and removed before term only for good cause after a hearing, if requested) and the Department of Environmental Quality Engineering within the Executive Office of Environmental Affairs share the authority for the review and regulation of a variety of development proposals in inland and coastal wetland areas in Revere. A person intending to remove, fill, dredge or alter a wetland must file a Notice of Intent with the Conservation Commission. Which, if it determines that the area of the proposed works is "significant to public or private water supply, to the groundwater supply, to flood control, to storm damage prevention of land containing shellfish, or to the protection of fisheries," is mandated to issue a written order imposing conditions on the work. In the event of unsatisfactory action or failure to act on the part of the Conservation Commission, an aggrieved party (including the applicant, abutters, or 10 residents of Revere) or the Commissioner of DEQE can request a new determination of significance and Order of Conditions from DEQE. Final Orders are recorded with the property's deed in the appropriate Registry of Deeds, and are binding upon subsequent owners of the property. The Commissioner of DEQE has the authority to promulgate rules and regulations "to effectuate the purposes of this section."

Regulations were promulgated by DEQE, effective August 3, 1978, which create uniformity of process and help to clarify the provisions of the Wetlands Protection Act by establishing standard definitions and procedures. Additionally, regulations, also effective August 3, 1978, were adopted under the Act which apply only to coastal wetlands, and are designed to ensure that development along the coastline is located, designed, built and maintained in a manner that protects the public interests in coastal resources. The regulations are in the form of performance standards, intended to identify the level of protection the issuing authority must impose in order to contribute to the protection of the interests of the Act. Much of Revere's wetlands, and all those within the Revere's CZM project area lie within the jurisdiction of these regulations for coastal wetlands. The regulations were adopted, in fact, as a result of the establishment of the Coastal Zone Management program of the EOEA. They are, however, adopted under the authority of the Wetlands Protection Act.

As the powers and duties of the Revere Conservation Commission, and their responsibilities for the protection of wetlands are spelled out by state law, recommendations for City action in terms of legal authority are not necessary. The state regulations regarding coastal wetlands provide ample legal authority, and guidance to the Conservation Commission. Problems may be encountered in their application, but these must be resolved on a case by case basis, and at this point, no generalization can be made.

However, an area for consideration, especially since Revere does not have wetland or floodplain zoning, is the adoption of a wetlands protection ordinance. This ordinance would not be adopted as part of the Zoning Ordinance but rather under the general power of the City to adopt ordinances conducive to its welfare (General Laws, Chapter 40, S. 21). The purpose of such an ordinance is to backstop the state act with local controls. The ordinance would therefore resemble the Wetlands Protection Act, but with some significant differences. It would clearly state that the Conservation Commission may deny a permit as well as regulate development. It could protect interests not covered by the state act such as wildlife, recreation, erosion control and aesthetics. Finally, a negative decision by the Conservation Commission must be appealed in the Superior Court rather than to DEQE as under the state law. The advantages to such an ordinance are that: it can be passed by a majority vote of the City Council; it can be administered by the Conservation Commission in conjunction with its duties under the Wetlands Protection Act; and the numerous exemptions, and possibilities for variances under the Zoning Act will not apply. The major disadvantage is that the validity of such an ordinance has not been ruled on by the States Supreme Judicial Court, although a lower court has upheld it. See Loverguast v. Gardner (Barnstable Superior Court #35497). Such an ordinance has been adopted in Dennis and Barnstable.

#### B. Administration

While changes in the legal authority of the Conservation Commission under the Wetlands Protection Act do not appear necessary and are beyond the scope of municipal action anyway, there does appear to be room for improvement in the municipal administration of the law.

The Revere Conservation Commission has a full time administrator. Time periods and procedures under the Act appear to be complied with, and Orders of Conditions appear to be within the scope of the law. The major administrative problem seems to be in compliance. The Wetlands Protection Act relies to a great extent on voluntary compliance. It is impossible for the Conservation Commission to be on top of every land use activity in the City which may come within the act. Voluntary compliance by the majority of individuals is necessary so that isolated violations can be identified and enforcement actions undertaken. Widespread noncompliance will result in a few enforcement actions while other illegal activity goes unprosecuted, and the public interests sought to be protected by the law are irreparably injured. This appears to be the situation in Revere.

Widespread illegal dumping in the City conducted by private individuals and the City's itself has created an overall impression that compliance with the law is not necessary. The gradual encroachment on the wetland areas from this dumping will eventually result, if unchecked, in the permanent destruction of these areas. Such a result can only worsen the City's flooding problems.

It is suggested that the City undertake administrative action to support the Conservation Commission in carrying out its duties under state law. A memo to all City departments, boards and agencies should be issued setting forth and requiring full compliance with the procedures and standards of the Wetlands Protection Act. Instances of violations of the Act, noted by other City officials, should be reported to the Revere Conservation Commission, and where another City agency has separate jurisdiction to enforce such violators, administrative and enforcement actions by that agency should be coordinated with and communicated to the Conservation Commission.

Finally, a special memorandum should be directed to the Revere Police Department, informing them of the provisions and requirements of the Wetlands Protection Act, and requesting their assistance, pursuant to their local enforcement powers, in investigating and reporting to the Conservation Commission possible violations of the Act. It may be desirable to amend Section 15-3 of Revere's Revised Ordinances to clearly set out the duty of the Chief of Police to report violators of, and enforce compliance with the Wetlands Protection Act.

#### C. Enforcement

The Massachusetts Attorney General's office is currently proceeding on fourteen violations of the Wetlands Protection Act occurring in the City of Revere, and involving both private individuals and the City itself. The City is taking steps to resolve those cases in which it is a party.

The Conservation Commission currently pursues those remedies available to it (cease and desist orders, requests for compliance, injunctive relief, temporary restraining orders and criminal complaints), both on its own and through counsel. While it could be recommended that the City Solicitors Office become more involved with enforcement of wetlands violations, such a recommendation may be premature at this point. The administrative action recommended above should first be implemented, and results evaluated. If the illegal dumping situation in the City does not improve, then stepped up activity by the City Solicitor, as well as other actions may be necessary. The assistance of the City Solicitor should, however, be sought whenever necessary to prevent irreversable harm to the City's natural resources.

New and Modified Implementation Techniques



## Introduction

This report describes new or modified implementation techniques for managing land in Revere, consistent with state environmental policy and with the community planning assistance grant from the Massachusetts Coastal Zone Management Program. The primary application of these techniques would be in the Revere Coastal Zone Project Area, but many of the procedures described could be utilized in other parts of Revere, or throughout the entire community. In fact, equal protection and due process considerations may require a community wide application for some of these measures.

The techniques described in these reports are developed or applied in response to identified deficiencies in existing land use management programs in Revere. This evaluation was conducted as project task 3a. Under Revere's CZM community assistance grant. Copies of that report are available for public review.

This report on new or modified implementation techniques briefly describes these techniques, focuses on certain institutional and legal issues relative to their implementation and, where appropriate, sets forth a model appropriate for implementation in Revere. Of course, any model included in this report must be carefully scrutinized by the City Solicitor and other appropriate city officials before it is enacted to further insure its "fit" in the City of Revere.

### I. Floodplain Zoning

As the report on Revere's existing land use management programs noted, one of the major deficiencies in Revere's zoning ordinance, at least in terms of state and local environmental policies, lies in its failure to address the City's flooding and drainage problems, and the related problem of protecting the City's remaining natural resources areas. That report noted that Revere will soon be called upon to enter the "regular" phase of the HUD Flood Insurance Program, and that in entering this phase of the program, Revere must adopt land use regulations for the floodplain area.

The floodplain may be described as the area adjoining the surface water which has been or may be covered by flood waters. The purpose of floodplain zoning, as developed throughout the U.S. in the last twenty years are to:

1. avoid encroachment on the floodplain which will increase the extent and severity of flooding up- and downstream; and
2. protect floodplain occupants, by limiting uses and regulating floor elevations, building construction, sewage disposal, etc. to reduce danger and damage when the flood hits.

Floodplains and wetlands operate together to:

1. retain the natural storage capacity of the watershed. Storage areas may include swamps and meadows adjacent to water courses which may be protected either as floodplains or as wetlands;
2. preserve the water table and water recharge areas within the community so as to protect water quality and insure present and potential water supplies; and
3. provide for the continued functioning of the natural system and avoid interference with natural food chains which serve mankind and all other life by assimilating waste, producing food, conserving water and maintaining stability in the system.

Within this broad range of purposes may be found every degree of protection, depending upon a community's problems and its political priorities. HUD and many communities use, as the "base elevation" for regulations, the elevation of the 100-year flood: the flood with a one percent chance of occurring in any year. Some communities regulate the area historically flooded during the highest flood of record. Others regulate only the area which is inundated every ten years (or even, annually).

Some communities have actually divided their floodplains, as suggested by HUD, into a "floodway" (representing the area necessary to carry off the base flood waters with some minimum rise in elevation) which must be stringently regulated, and a surrounding floodplain "fringe" area, which may be developed to some degree. Leaving the landowner with some practical use of his land helps to meet the legal issues discussed below. It is important to remember, however, that constant, continual encroachment on floodplains has a cumulative effect even though individual incursions seem too small to forbid. In the Ipswich River (Mass.) basin, for example, the discharge formerly associated with the 100-year flood now occurs as the 20-year flood--that is, the chance of that elevation being achieved has increased fivefold, principally from such incremental filling.

Some confusion has arisen regarding the relationship of floodplain zoning to the HUD flood insurance program. The purpose of the federal program is to substitute flood insurance purchased by landowners for disaster relief furnished by taxpayers. In order to qualify for the subsidized flood insurance rates, a community must join the program. Revere has joined the program, and it is projected that by the fall of 1979 HUD will have completed the "rate maps" showing the base level of the 100-year flood and the "regulatory floodway" which will carry that flood with no more than a one-foot rise. (The City can opt for a zero-increase floodway, in which case the floodway would encompass the entire 100-year floodplain.) The community must then adopt land-use regulations forbidding filling or building within the floodway and requiring that buildings in the rest of the floodplain be elevated (if homes) or flood-proofed. Homes in the areas impacted by coastal storms must be specially constructed with "breakaway" fronts as well. Barrier beaches are not to be built upon.

HUD National Flood Insurance Program regulations set forth standards for a community's floodplain management regulations:

These regulations must be legally-enforceable, applied uniformly throughout the community to all privately and publicly owned land within flood-prone, mud-slide (i.e., mudflow) or flood-related erosion areas, and the community must provide that the regulations take precedence over any less restrictive conflicting local laws, ordinances or codes. 24 CFR § 1910.1(b)

In addition, HUD sets forth the following planning considerations for flood-prone areas (24 CFR § 1910.22):

- (a) The floodplain management regulations adopted by a community for flood-prone areas should:
  - (1) Permit only that development of flood-prone areas which (i) is appropriate in light of the probability of flood damage and the need to reduce flood losses, (ii) is an acceptable social and economic use of the land in relation to the hazards involved, and (iii) does not increase the danger to human life;
  - (2) Prohibit nonessential or improper installation of public utilities and public facilities in flood-prone areas.
- (b) In formulating community development goals after the occurrence of a flood disaster, each community shall consider --
  - (1) Preservation of the flood-prone areas for open space areas;
  - (2) Relocation of occupants away from flood-prone areas;
  - (3) Acquisition of land or land development rights for public purposes consistent with a policy of minimization of future property losses;
  - (4) Acquisition of frequently flood-damaged structures;
- (c) In formulating community development goals and in adopting flood plain management regulations, each community shall consider at least the following factors --
  - (1) Human safety;
  - (2) Diversion of development to areas safe from flooding in light of the need to reduce flood damages and in light of the need to prevent environmentally incompatible floodplain use;

- (3) Full disclosure to all prospective and interested parties (including but not limited to purchasers and renters) that (i) certain structures are located within flood-prone areas, (ii) variances have been granted for certain structures located within flood-prone areas, and (iii) premium rates applied to new structures built at elevations below the base flood substantially increase as the elevation decreases;
- (4) Adverse effects of floodplain development on existing development;
- (5) Encouragement of floodproofing to reduce flood damage;
- (6) Flood warning and emergency preparedness plans;
- (7) Provision for alternative vehicular access and escape routes when normal routes are blocked or destroyed by flooding;
- (8) Establishment of minimum flood-proofing and access requirements for schools, hospitals, nursing homes, orphanages, penal institutions, fire stations, police stations, communications centers, water and sewage pumping stations, and other public or quasi-public facilities already located in the flood-prone area, to enable them to withstand flood damage, and to facilitate emergency operations;
- (9) Improvement of local drainage to control increased runoff that might increase the danger of flooding to their properties;
- (10) Coordination of plans with neighboring community's floodplain management programs;
- (11) The requirement that all new construction and substantial improvements in areas subject to subsidence be elevated above the base flood level equal to expected subsidence for at least a ten year period;
- (12) For riverine areas, requiring subdividers to furnish delineation for floodways before approving a subdivision;
- (13) Prohibition of any alteration or relocation of a watercourse, except as part of an overall drainage basin plan. In the event of an overall drainage basin plan, provide that the flood carrying capacity within the altered or relocated portion of the watercourse is maintained;
- (14) Requirement of setbacks for new construction within Zones V1-30 on a community's FIRM;
- (15) Requirement of additional elevation above the base flood level for all new construction and substantial improvements within Zones A1-30 and V1-30 on the community's FIRM to protect against such occurrences as wave wash and floating debris, to provide an added margin of safety against floods having a magnitude greater than the base flood, or to compensate for future urban development;

- (16) Requirement of consistency between state, regional and local comprehensive plans and flood plain management programs;
- (17) Requirement of pillings or columns rather than fill, for the elevation of structures within flood-prone areas, in order to maintain the storage capacity of the flood plain and to minimize the potential for negative impacts to sensitive ecological areas;
- (18) Prohibition, within any floodway or coastal high hazard area, of plants or facilities in which hazardous substances are manufactured.

The HUD Flood Insurance Program requirements raise a number of legal issues as to the extent to which private property within the floodplain may be regulated consistent with accepted legal standards and constitutional principles. The use of the municipal "police power" to regulate land uses for the protection of the public health, safety and welfare, particularly with regard to floodprone areas has been dealt with in a number of important judicial decisions in the Commonwealth, dating back to the nineteenth century.

In 1846 the Massachusetts Supreme Judicial Court upheld a statute which prohibited removal of sand and gravel from beaches in order to protect streams, ports, and harbors. Commonwealth v. Tewksbury, 11 Met. (Mass.) 55 (1846). In 1851, the court sustained a regulation for Boston Harbor which prohibited the construction of wharves beyond a limit established by the legislature, Commonwealth v. Alger, 7 Cush (Mass.) 53 (1851). In this landmark case, widely cited for its discussion of state police powers, Justice Shaw reaffirmed the Tewksbury decision, stating:

(W)e are of the opinion that this principle on which that judgment proceeded was correct. It assumes that all real estate, inland or on the seashore, derived immediately or remotely from the government of the state, is taken and held under tacit understanding that the owner shall so deal with it as not to cause injury to others; that when land is so situated, or such is its configuration, that it forms a natural barrier to rivers or tidal watercourses, the owner cannot justifiably remove it to such an extent as to permit the waters to desert their natural channels, and overflow, and perhaps inundate fields and villages, render rivers, ports and harbors shallow, and completely desolate, and thereby destroy the valuable rights of other proprietors, both in the navigation of the stream, and in the contiguous lands. *Id.* at 86, 87.

More recently, the S.J.C. decision in Turnpike Realty Co. v. Dedham, 362 Mass. 221 (1972) is often cited as authority for the regulation of land uses within the floodplain area. In that decision, upholding a by-law regulating filling and building in a floodplain district, the court identified "three basic public policy objectives of restricting use of

floodplains...: (1) the protection of individuals who might choose, despite the flood dangers to develop or occupy land on a flood plain; (2) the protection of other landowners from damages resulting from the development of a floodplain and the consequent obstruction of the flood flow; (3) the protection of the entire community from individual choices of land use which require subsequent public expenditures for public works and disaster relief." Id. at 228.

In addition, the S.J.C. has recognized that the protection of marine fisheries and the preservation of coastal wetlands a proper public purposes. Golden v. Selectmen of Falmouth, 358 Mass. 519, 523 (1970). Commissioner of Natural Resources v. S. Volpe and Co., 349 Mass. 104, 107 (1965).

While few courts have considered the validity of wildlife protection as a zoning objective, Delaware court noted that the effect on wildlife was validly considered in rezoning a swampy area. The court stated:

It appears that at both the hearing before the Zoning Commission and that before the Levy Court considerable concern was expressed by many citizens as to the effect of the proposed rezoning upon the Cedar Swamp section which was recognized as a prime wildlife area. This was certainly a factor which the Levy Court could consider in relationship to the public welfare. Dukes v. Shell Oil Company, 40D, Ch. 174, 177 A.2d 785, 792 (1962).

It should be noted at this point that the new state Zoning Act (Chapter 808 of the Acts of 1975 amended G.L. Ch. 40A) expressly permits municipalities to use zoning to protect wetlands, waterbodies and areas subject to flooding. St. 1975 C. 808, S. 2A.

There have been cases where the application of a local by-law has been found unconstitutional in that it deprived a landowner of substantially all practical use of his land without compensation. Aronson v. Town of Sharon, 346 Mass. 598, 603-604, 195 N.E. 2d 341, MacGibbon v. Board of Appeals of Duxbury, 255 N.E. 2d 347, 351 (1970). However, the application of this "taking" (confiscation) doctrine must be determined by the courts on a case by case basis, by balancing the loss of value suffered by the landowner against the protection of the public health, safety and welfare. For example, in the Turnpike Realty case, cited above, a possible diminution of value from \$431,000 to \$53,000 was upheld because of the demonstrable flood hazards of the Charles River. The constitution does not guarantee a landowner a profit on land, and the loss of speculative value will not render regulation unconstitutional provided some kind of practical use of the land may be made.

In view of the serious flooding and drainage problems which exist in Revere, the problems with respect to illegal dumping and encroachment into wetland areas in the City, and the need to comply, in the very near future, with HUD requirements for flood prone areas, the floodplain overlay restrict, set forth below should be considered by the City, and after making any modifications

deemed appropriate, adopted by the City Council as an overlay district this regulation would impose standards on building and development in the designated floodplain areas which must be complied with. In addition all existing zoning requirements for the areas in question, as set forth in the underlying zoning districts must also be met. The stricter standards in either district would prevail.

The previous evaluation of Revere's zoning ordinance conducted as project task 3.a under Revere's CZM Community Assistance Grant noted that the entire zoning ordinance should be written. This recommendation still stands, but such a revision is the limited scope funding, and area covered by this CZM work. The overlay district presented here should meet HUD requirements and will provide better regulation of development in flood prone areas of Revere pending a comprehensive revision of land use controls in the City.

It should be pointed out that prior to the adoption of a floodplain ordinance, the floodplain should be mapped and such map should be referred to in the ordinance and adopted along with the ordinance.

General Laws, Chapter 40A, Section 3 states:

"No provision of a zoning ordinance or by-law shall be valid which sets apart districts by and boundary line which may be changed without adoption of an amendment to the zoning ordinance or by-law."

This provision prohibits so-called floating zones where a new zoning district is established, and the subsequent placement of the zone on the zoning map is accomplished by means of an administrative action by a local board. However, where the subsequent placement of the zone on the zoning map is accomplished by a proper legislative designation of such a zone (i.e. action by the City Council) the zoning is apparently valid. See Noonan v. Moulton 348 Mass. 633, 638, 639 (1964) .

In terms of the situation in Revere, if the floodplain district is adopted by the City Council prior to the mapping of the floodplain (which is being done by HUD and should be available in the fall of 1979) then a subsequent City Council approval will be necessary to place the district on the map.

Section 21-29A - Special Provisions Applicable to Floodplain Areas in the City of Revere.

(A) The purpose of these special provisions establishing a floodplain protection district as an overlay district, superimposed on the other zoning districts established by this ordinance are:

1. To provide that lands in the City of Revere subject to seasonal or periodic flooding as described hereinafter shall not be used for such purposes, and in such a manner as to endanger the health, safety or welfare of the occupants thereof, or of the public generally, or so as to burden the public with costs resulting from unwise individual choices of land use.

2. To assure the continuation of the natural flow pattern of water course(s) within the City, in order to provide adequate and safe floodwater storage capacity to protect persons and property against the hazards of flood inundation.
  3. To retain the natural storage capacity of the watershed.
  4. To conserve natural conditions, fish, shellfish and wildlife habitats, open space and generally the amenities of the City, and otherwise to preserve, protect and promote the health, safety and welfare of the inhabitants of the City and the public.
  5. To minimize losses by provisions designed to consider floodplain management programs in neighboring areas.
- (B) The locations and boundaries of the floodplain protection district are shown on a map entitled, "Floodplain Protection District, Revere, Mass. - 19\_\_," which is hereby made a part of this ordinance and is on file in the office of the City Clerk, and which map shows the floodway fringe area, and Coastal High Hazard Area. The "floodway" as used in Section 21-29A of this ordinance shall mean the channel of the watercourse and those portions of the adjoining floodplains which are reasonably required to carry and discharge the 100-year flood with no more than a one-foot rise in the flood level. The Floodway fringe area as used in Section 21-29A of this ordinance shall mean that portion of the regulatory floodplain outside of the floodway. The Coastal High Hazard Area as used in Section 21-29 of this ordinance shall mean the area subject to high velocity water, including, but not limited to hurricane wave wash.
- (C) Where interpretation is needed as to the exact location of the boundaries of the District as shown on the Floodplain Protection District Map, the (Board of Appeals) shall make the necessary interpretation.
- (D) The Floodplain Protection District shall be considered as overlying other Districts. Any uses permitted in the portions of the Districts so overlaid may be permitted as an exception if authorized by special permit by the (Board of Appeals).

The following uses which have low flood damage potential and do not represent a hazard to other lands during times of flood shall be permitted within the Floodplain Protection District as of right.

1. Conservation of soil, water, plants and wildlife, including wildlife management shelters.
2. Outdoor recreation, including but not limited to play areas, nature study, boating, fishing and hunting where otherwise legally permitted.



3. Foot, bicycle and horse paths and bridges, provided such uses do not affect the natural flow pattern of any water course.
  4. Agriculture of all types including but not limited to grazing, crop farming, nurseries, truck gardening and harvesting of crops.
  5. Forestry including landscaping and accessory uses such as flower or vegetable gardens, lawns and fences.
- (E) In the Floodplain Protection District, the (Board of Appeals) may grant a special permit for any use and/or structure, subject to the requirements of Section 21-2 of this ordinance and the following:
1. The (Board of Appeals) shall find that the proposed use will not be detrimental to the public health, safety and welfare; and will not derogate from the purposes of this by-law. The proposed use will comply in all respects to the provisions of the underlying district or districts within which the land is located.
  2. The requested use will not overload any public water, drainage or sewer system or any other municipal system to such an extent that the requested use or any developed use in the immediate area or in any other area of the town will be unduly subjected to hazards affecting health, safety, or the general welfare.
  3. Fill or other encroachment, within a designated floodway, which would impair the floodways' ability to carry and discharge the waters resulting from the 100-year flood shall not be allowed.
- (F) In order that the (Board of Appeals) may determine that the above mentioned conditions relative to the issuance of special permits are met, a site plan at a scale of 1" = 100', prepared by the registered land surveyor or registered professional civil engineer, shall be submitted in quadruplicate to the (Board of Appeals) by the applicant. The site plan shall show at least the following:
1. The location, boundaries, and dimensions of each lot.
  2. Two foot contours of the existing and proposed land structure.
  3. Location of existing and proposed structures, watercourses, and drainage easements, means of access, drainage and sewer disposal facilities.
  4. The area and location of existing or proposed leaching fields, if any.

The (Board of Appeals) shall within 10 days after receipt of said site plan, transmit one copy of said plan to the City Planner, City Engineer, Board of Health, Superintendent of Public Works, Conservation Commission and the Mayor's Office of Planning and Community Development. Said Boards and Commission may, at their discretion, investigate the case and report in writing their recommendation to the (Board of Appeals). The (Board of Appeals) shall not take final action on such plan until it has received a report thereon from said Boards and Commission, or until said Boards and Commission have allowed thirty-five (35) days to elapse after receipt of such plan without a submission of a report thereon.

(G) In considering a site plan, the (Board of Appeals) shall, to a degree consistent with a reasonable use of the site, find all the following requirements to be fulfilled:

1. Convenience and safety of vehicular and pedestrian movement within the site, and in relation to adjacent streets and property.
2. Location and construction of utilities so as to minimize or eliminate flood damage.
3. Adequacy of the methods of disposal of sewage, refuse and other wastes resulting from the uses permitted on the site, and the methods for providing adequate drainage so as to minimize flood damage.
4. The floor of the basement, or if none, the lowest floor of new construction or substantial improvement of structures for residential uses shall be at or above the 100-year flood level.
5. The floor of the basement, or if none, the lowest floor of new construction or substantial improvement of structures for non-residential uses shall be at or above the 100-year flood level or flood proofed in compliance with the requirements of the Massachusetts State Building Code.
6. No use or land filling will raise the 100-year flood level more than (1) foot at any point.
7. New or modified uses within the floodway will not raise the level nor impede the flow of the 100-year flood.
8. In the Coastal High Hazard Area structures or substantial improvements shall be located landward of mean high tide.
8. In the Coastal High Hazard Area the floor of the basement, or if none, the lowest floor of any new structure or substantial improvement shall be no lower than the 100-year level and in compliance with the requirements of the Massachusetts State Building Code regarding anchorage to piles and space below lowest floor free of obstruction.

Substantial improvement, as used above, means any repair, reconstruction, or improvement of a structure, the cost of which equals or exceeds 50 percent of the actual cash value of the structure either (a) before the improvement is started, or (b) if the structure has been damaged and is being restored, before the damage occurred.

In a floodway, no non-conforming use shall be expanded but may be modified, altered, or repaired to incorporate flood proofing measures in compliance with the State Building Code provided such measures do not raise the level of the 100-year flood.

In a Coastal High Hazard Area, no non-conforming use, on land below the 100-year level, shall be expanded.

- (H) The provisions of this section are not intended to repeal, amend, abrogate, annul, or interfere with any lawfully adopted ordinances, covenants, regulations or rules. However, where this section imposes greater restrictions, the provisions of this section shall govern.
- (I) The invalidity, unconstitutionality or illegality of any provision of this section shall not have any effect upon the validity, constitutionality, or legality of any other provision of this ordinance.

## II. Special Permits

The previously mentioned report on Revere's existing land use management programs, prepared as project task 3a under Revere's CZM Community Assistance Grant also noted that a major area of concern in Revere's existing zoning ordinance is with the confusing and incomplete provisions relating to the issuance of special permits and the allowance of exceptions under the zoning ordinance. That report noted a number of discrepancies and conflicting requirements in allowing special permits and exceptions in the City of Revere. These problems have been verified by the City Solicitor and the City Clerk. As the City Clerk has pointed out, there now exists at least seven methods to seek an exception from the zoning provisions currently existing in the ordinance (see letter from John J. Henry, City Clerk to Councillor William Foley, subject: City of Revere Zoning Ordinances - Special Permits, May 21, 1979).

In terms of sound land use control techniques which are consistent with the statutory scheme set forth in the state zoning act (General Laws, Chapter 40A as amended by Chapter 808 of the Acts of 1975) it is preferable that only two means of granting exceptions from the zoning ordinance be provided. These two methods should be by the granting of variances from the provisions of the zoning ordinance, and by the issuance of special permits.

Variances are allowed pursuant to General Laws, Chapter 40A, Section 10. Revere's revised zoning ordinance (Chapter 21, Section 21-33) generally mirrors the requirements of the state act. Possible problem areas regarding use variances and the notice requirement under the Revere Zoning Ordinance have been set forth in the report previously mentioned.

The deficiencies identified in the previous Revere CZM report on existing land use controls should be addressed by responsible city officials. The City Clerk has already acknowledged problems with respect to exceptions under the ordinance. All of these matters should be addressed by the City Council and other City officials. However, in terms of this report, the emphasis is on proposing new techniques to improve land use control within the Revere CZM project area. Clearly, the City Council should delete most, if not all of the exceptions to the zoning ordinance currently existing and provide for only one method of granting special permits and one method of granting variances under the by-law. If use variances are to be allowed, they should perhaps be allowed generally and not just in certain districts, and clearly the notice requirements of G.L. C. 40A should be followed.

After the above mentioned matters have been addressed, the City should consider a revision of the special permit provision of the Zoning Ordinance (Chapter 21, Section 21-2(b)) that sets forth specific standards to guide the special permit granting authority in the issuance of such permits.

In general, the criteria governing action of a board in granting a special permit are less stringent than those involved in an application

for a variance. Kiss v. Board of Appeals of Longmeadow 1976 Mass. Adv. Sh. 2355. However, this is not to say that such permits can be issued upon the whim or unbridled discretion of the permit granting authority. Adequate standards for the guidance of the board in exercising the special permit power must be set forth in the Zoning Ordinance. Murphy v. Zoning Board of Appeals of Lawrence, 2 Mass. App. 876 (1974). A zoning by-law that is so vague and ambiguous that its meaning can only be guessed at can lead to arbitrary action in its application and therefore be rendered null and void by a court finding that it violates the due process of law. Berliner v. Feldman, 363 Mass. 767 (1973).

Viewed together, the state zoning act and the by-law must provide adequate standards for the guidance of the special permit granting authority to decide whether to grant or to withhold special permits. "The standards need not be of such a detailed nature that they eliminate entirely the element of discretion from the board's decision. It would be difficult, if not impossible, to foresee and specify, by ordinance or by-law, every circumstance or combination of circumstances under which special permits should be granted or withheld. The degree of certainty with which standards for the exercise of discretion are set up must necessarily depend on the subject matter and the circumstances." MacGibbon v. Board of Appeals of Duxbury, 255 N.E. 2d 347, 350 (1970).

The methods used by a community to adjust zoning regulations may be reasonably flexible provided that they are consistent with the substantive and procedural provisions of the state zoning statute and provided that such adjustments are made in the public interest in accordance with sufficiently stated standards. Y.D. Dugout, Inc. v. Board of Appeals of Canton, 357 Mass. 25 (1970). Finally, when granting a special permit, the special permit granting authority must set forth reason or reasons for its decision that the applicable statutory and by-law standards have been met. Josephs v. Board of Appeals of Brookline, 362 Mass. 290 (1972).

Chapter 21, Section 21-2(b) of Revere's Revised Ordinances should be amended to provide for standards and guidelines to be used by the special permit granting authority in the review of special permit applications. Setting forth sufficient standards in the ordinance will not only help address the legal problems mentioned above, but should also provide for better land use planning and environmental protection within the City. Presently, the wide discretion given the City Council in the granting of special permits does not insure, in every instance, that the economic, social and environmental interests of the City are considered, and protection in every special permit proceeding. Detailed standards, adopted after input from all municipal agencies and interests, would insure that all City concerns are addressed in every special permit proceeding. Such standards should address drainage to insure that new projects do not exacerbate the City's flooding problems, and should also insure that such factors as the placement of buildings and utilities, surface and groundwater drainage, water supply, access, parking, loading, landscaping, lighting, dust and noise control, environmental damage and off-site impacts are also addressed.

Therefore, it is recommended that the present language in Chapter 21, Section 21-2(b) of Revere's Revised Ordinances be deleted and the following inserted in place thereof:

b. Special Permits

- (i) The City Council shall act as the Special Permit Granting Authority in the administration of this Zoning Ordinance and may issue Special Permits where said permits are a prerequisite to the issuance of a Building Permit as prescribed by the Building Code or are otherwise allowed under this Zoning Ordinance. The procedures and standards set forth for the issuance of Special Permits in this section shall take precedence over and be controlling over all other procedures and standards set forth in this Zoning Ordinance for the allowance of Special Permits or exceptions to this Zoning Ordinance. This section shall not, however, apply to the issuance of Variances to this Zoning By-law as authorized by Chapter 21, Section 21-33(e) of Revere's Revised Zoning Ordinance.

All applications for Special Permits shall be filed by the petitioner with the City Clerk, who shall forthwith transmit a copy thereof to the City Council. Upon receipt of an application for a Special Permit, the City Council shall refer the application and plans to the City Planner, City Engineer, Superintendent of Public Works, the Board of Health and the Conservation Commission, and shall not issue any Special Permits until reports have been received from said individuals or boards, or thirty-five days shall have elapsed following referral without receipt of such reports.

- (ii) All applications for a Special Permit shall be accompanied by a site plan, and data on the environmental impact of the proposed project.

The site plans shall show all existing and proposed buildings, existing and proposed contour elevations, structures, parking spaces, driveway openings, driveways, service areas, facilities for sewage, refuse and other waste disposal and for surface water drainage, wetlands, surface water, areas subject to the 100-year flood, and landscape features such as fences, walls, planting areas, walks, and lighting, both existing and proposed. The site plan shall also show the relation of the above features to adjacent ways and properties. The site plan shall also show all contiguous land owned by the applicant or by the owner of the property which is the subject of the application.

The applicant shall also submit environmental impact data sufficient to enable the City Council and other City officials to determine what methods are used by the applicant to promote the environmental health of the community and to encourage sound environmental design to the fullest extent allowed by the law.

The data supplied should include the following:

A. Physical Environment

1. Describe the general physical conditions of the site, including amounts and varieties of vegetation, general topography, unusual geologic, scenic and historical features, trails, and open space links, and indigenous wildlife.
2. Describe how project will affect these features.
3. Provide a complete physical description of the project, and relationship to surrounding areas.

B. Surface Water and Soils

1. Describe location, extent and type of existing water and wetlands, including existing surface drainage characteristics, both within and adjacent to the project.
2. Describe the methods to be used during construction to control erosion and sedimentation; i.e., use of sediment basins and type of mulching, matting, or temporary vegetation; describe approximate size and location of land to be cleared at any given time and length of time of exposure; covering of soil stockpiles; and other control methods used. Evaluate effectiveness of proposed methods on the site and on the surrounding areas.
3. Describe the permanent methods to be used to control erosion and sedimentation. Include description of:
  - a. any areas subject to flooding or ponding;
  - b. proposed surface drainage system;
  - c. proposed land grading and permanent vegetative cover;
  - d. methods to be used to protect existing vegetation;
  - e. the relationship of the development to the topography;
  - f. any proposed alterations of shore lines, marshes or seasonal wet areas;
  - g. any existing or proposed flood control or wetland easements;
  - h. estimated increase of peak run-off caused by altered surface conditions, and methods to be used to return water to the soils.
4. Completely describe sewage disposal methods. Evaluate impact of disposal methods on surface water, soils and vegetation.
5. Describe any limitations on proposed project caused by sub-surface soil and water conditions, and methods to be used to overcome them.

C. City Services

1. Describe estimated traffic flow at peak periods and proposed circulation pattern.
2. Describe locations and number of vehicles accommodated in parking areas.
3. Describe effect of project on police and fire protection services.
4. Describe effect of project on public works department services.
5. Describe effect of project on educational services.
6. Describe the effect of the project on the City water supply and distribution system.
7. Describe the effect of the project on the City's sewerage system including the design flow of any connections from the project to the City's sewerage system, the length and location of such connections, and the nature and quality of the discharge from such connections.

D. Human Environment

1. Provide a tabulation of proposed buildings by type, size (number of bedrooms, floor area), ground coverage, and a summary showing the percentage of the tract to be occupied by buildings, parking and other paved vehicular areas, and usable open space.
2. Describe type of construction, building materials used, location of common areas, location and type of service facilities (laundry, trash, garbage disposal).
3. State proximity to transportation, shopping and educational facilities.
4. Describe proposed recreational facilities, including active and passive types; and age groups participating, and state whether recreational facilities and open space are available to all municipal residents.

E. General Impact

1. Summarize briefly environmental impact on entire City with supporting reasons.



- (iii) Within 65 days from the filing of an application for a Special Permit with the City Clerk, the City Council shall hold a public hearing. Notice of said hearing shall be given by publication in a newspaper of general circulation in the City once in each of two successive weeks, the first publication to be not less than fourteen days before the day of the hearing, and by posting such notice in a conspicuous place in the City Hall for a period of not less than fourteen days before the day of such hearing. Notice shall be sent by certified mail, return receipt requested at the expense of the applicant to those persons having an interest in the proceedings, including the applicant, abutters, owners of land directly opposite on any public or private street or way and owners of land within 300 feet of the property line, the Planning Board, Conservation Commission and Board of Health of the City and the Planning Board, Board of Health and Conservation Commission of every abutting city or town. Publications and notices shall contain the name of the petitioner, a description of the area or premises, street address, if any, or other adequate identification of the location of the area or premises which is the subject of the petition, the date, time and place of the public hearing, the subject matter of the hearing, and the nature of the action or relief requested, if any. No such hearing shall be held on any day on which a state or municipal election, caucus, or primary is held in the City.

The City Council shall act upon an application for a Special Permit within ninety (90) days following the public hearing. Failure to act within the ninety (90) days shall be deemed to be a grant of the permit applied for. A unanimous vote of the City Council is necessary for the approval of a Special Permit.

The City Council shall only issue a Special Permit upon:

- A. A showing of good and sufficient cause;
- B. A determination that the proposed use or activity is not specifically prohibited by Revere's Revised Zoning Ordinance;
- C. A determination that the granting of a Special Permit will not result in increased flood heights, additional threats to public safety, extraordinary public expense, create nuisances, cause fraud on or victimization of the public or conflict with existing local laws; and
- D. A determination that the granting of a Special Permit is in harmony with the general purpose and intent of Revere's Revised Zoning Ordinance.

- (iv) Upon the granting of a Special Permit the City Council shall issue to the owner and to the applicant, if other than the owner, a copy of its decision, certified, by the City Council, containing the name and address of the owner, identifying the land affected, setting forth compliance with the statutory requirements for the issuance of such permit and certifying that copies of the decision and all plans referred to in the decision have been filed with the Planning Board and City Clerk. No Special Permit, or any extension, modification or renewal thereof, shall take effect until a copy of the decision bearing the certification of the City Clerk that twenty days have elapsed after the decision has been filed in the office of the City Clerk and no appeal has been filed or that if such appeal has been filed, that it has been dismissed or denied, is recorded in the Registry of Deeds for the County and district in which the land is located and indexed in the grantor index under the name of the owner of record or is recorded and noted on the owner's certification of title.

The City Council shall furnish the Building Inspector with a copy of all decisions regarding Special Permits.

The Special Permit shall lapse one year from the date of approval if construction has not begun by such date, except for good cause.

All applications for Special Permits shall be accompanied by the payment of such fees as are from time to time established by the City Council, the cost of such fees to include the cost of notices. However, fees shall not be charged if the appellant, applicant or petitioner is acting as an officer or board of the City of Revere.

### III. Wetlands Protection District

The need to further protect Revere's wetlands has been emphasized in the City's CZM work. The lack of effective local regulations to provide this protection has also been noted. While the floodplain ordinance suggested by this report will provide a greater measure of protection for wetlands the factors which must be considered in wetlands protection go beyond the securing of the public health, safety and welfare from the dangers of flooding, such as the protection of fisheries, wildlife and shellfish. While most Massachusetts communities protect wetlands through the adoption of wetland zoning districts, an alternative, non-zoning approach may also be available. Such an ordinance would not be adopted as part of the zoning ordinance but rather under the general power of the city to adopt ordinances conducive to its welfare (General Laws, Chapter 40, S. 21). The purpose of such an ordinance is to backstop the state act with local controls. The ordinance would therefore resemble the wetlands protection act, but with some significant differences. It would clearly state that the Conservation Commission may deny a permit as well as regulate development. It could protect interests not covered by the state act such as wildlife, recreation, erosion control and aesthetics, and finally a negative decision by the Conservation Commission must be appealed in the superior court rather than to DEQE as under the state law. The advantages to such an ordinance are that: it can be passed by a majority vote of the City Council; it can be administrated by the conservation commission in conjunction with its duties under the Wetlands Protection Act; and the numerous exemptions, and possibilities for variances under the zoning act will not apply. The major disadvantage is that the validity of such an ordinance has not been ruled on by the state Supreme Judicial Court, although a lower court has upheld it. See Lovequist v. Gardner (Barnstable Superior Court #35497).

This case has been appealed, and argued before the Supreme Judicial Court, and a decision should be handed down by the time this report is printed and distributed. Therefore any assertions as to its legal validity are, at this point, speculative. While such an ordinance has been adopted in Dennis and Barnstable, it should not be considered for adoption anywhere else until the pending case is decided. The model presented here is purely for informational purposes. Should the ordinance be upheld, the Conservation Law Foundation plans to develop a new non-zoning wetlands protection ordinance which will improve the model presented here.

CITY OF REVERE

WETLANDS PROTECTION BY-LAW

1. The purpose of this by-law is to protect the foreshores and wetlands of the City of Revere by controlling activities deemed to have a significant effect upon wetland values, including but not limited to the following: public or private water supply, groundwater, flood control, erosion control, storm damage, water pollution, fisheries, shellfish, wildlife, recreation, and aesthetics. No person shall remove, fill, dredge, or alter any bank, beach, dune, flat, marsh, meadow, or swamp bordering on the ocean or any estuary, creek, river, stream, pond or lake, or any land under said waters or any land subject to tidal action, coastal storm flowage, or flooding, without first filing written notice of his intention so to remove, fill, dredge or alter by sending a separate letter, by certified mail, to the Conservation Commission. Such notice shall include such plans as may be necessary to describe such proposed activity and its effect on the environment. The same plans and specifications required to be filed by an applicant under Massachusetts General Laws, Chapter 131, Section 40 will be accepted as fulfilling the requirements of this by-law. The said Commission, in its discretion, may hear any oral presentation under this by-law at the same public hearing required to be held under the provisions of said Chapter 131, Section 40 of the Massachusetts General Laws.
2. The term "person" as used in this by-law shall include any individual, group of individuals, association, partnership, corporation, company, business organization, trust, estate, the Commonwealth or political subdivision thereof, administrative agency, public or quasi-public corporation or body, or any other legal entity or its legal representatives, agents or assigns.
3. The Commission may make a determination as to whether or not this by-law applies to a specific situation prior to the filing of a written notice of intent under the provisions hereof, upon receipt of a written request from any person desiring such determination. The Commission, its agents, officers and employees, may enter upon the land upon which the proposed work is to be done in response to a request for a prior determination or for the purpose of carrying out its duties under this by-law, including investigation of violation of the by-law alleged in writing, and may make or cause to be made such examination or survey as is deemed necessary.
4. The Conservation Commission is empowered to deny permission for any dredging, filling or altering of subject lands within the City, if, in its judgement, such denial is necessary to preserve the environmental quality of either or both the subject lands and contiguous lands. Due consideration shall be given to possible effects of the proposal on all values to be protected under this by-law and to any demonstrated hardship on the petitioner by reason of a denial, as brought forth in the public hearing.

5. The Commission may, as an alternative to a denial, impose such conditions as it deems necessary to contribute to the protection and preservation of subject lands in accordance with the purposes of this by-law. Any Order of Conditions issued under this by-law shall be subject to the same constraints and be identical to any such order issued by the Revere Conservation Commission under the provisions of Massachusetts General Laws, Chapter 131, Section 40.
6. The notice required by the first paragraph of this by-law shall not apply to emergency projects necessary for the protection of the health or safety of the citizens of Revere and to be performed or ordered to be performed by any administrative agency of the Commonwealth or by the Town. An emergency project shall mean any project certified to be an emergency by the Conservation Commission or the Commissioner of the Department of Environmental Quality Engineering, if this by-law and Massachusetts General Laws Chapter 131, Section 40 are both applicable, or by the Conservation Commission if only this by-law is applicable. In no case, shall any filing, dredging or altering commence prior to any emergency certification nor extend beyond the time necessary to abate the emergency.
7. Any person filing a Notice of Intention or requesting a prior determination under this by-law shall, in writing and at the same time, notify all abutters, and the owner of the subject property, if different from the petitioner, on which work is proposed or for which prior determination is sought, of his intention to so alter or request said determination. A list of persons so notified shall be presented to the Revere Conservation Commission with said Notice of Intention or request for prior determination.
8. The Conservation Commission may require the posting of a bond with surety, running to the municipality, and sufficient as to form and surety in the opinion of the Commission's Counsel, to secure faithful and satisfactory performance of work required by any final Order of Conditions, in such sum and upon such conditions as the Commission may require. Other evidence of financial responsibility which is satisfactory to the Commission may be accepted in lieu of bonding. Notwithstanding the above, the amount of such bond shall not exceed the estimated cost of the work required or the restoration of affected lands and properties if the work is not performed as required, whichever is greater. Forfeiture of any such bond shall be recoverable at the suit of the municipality in Superior Court.

#### IV. Planned Unit Development Ordinance

In 1975 the Massachusetts Legislature amended the state zoning law to provide for various procedural and conceptual improvements to zoning in Massachusetts. Provisions of this new act relative to special permits and variance procedures have been described in other sections of this report. An important conceptual improvement contained in the zoning act (G.L. C. 40A, as amended by C. 808 St. 1975) is the specific authorization for planned unit development (PUD) districts.

General Laws, C. 40A, §. 9 defines PUDs as a "mixed use development on a plot of land containing a minimum of the lesser of sixty thousand square feet or five times the minimum lot size of the zoning district, but of such larger size as an ordinance or by-law may specify, in which a mixture of residential, open space, commercial, industrial or other uses and a variety of building types are determined to be sufficiently advantageous to render it appropriate to grant special permission to depart from the normal requirements of the district to the extent authorized by the ordinance or by-law."

PUD districts are recognized as a valuable land use control tool which allow for an extra measure of diversity within an area or community and permits the comprehensive, rather than the piecemeal development of an area as a whole. The mixed use development permitted under a PUD is particularly attractive for use in more urban, built-up areas such as Revere, where good developable land is scarce, and where sites lend themselves to a variety of uses.

Some PUDs are limited to residential uses and are known as planned unit residential developments (PURD) or cluster developments. Cluster developments are also authorized by G.L. C. 40A, §. 9, as amended by C. 808 St. 1975. A cluster development is a residential development on building lots with reduced dimensions and the maintenance of the "left over" lot area as permanent open space. Its advantages include greater freedom of street and lot layout, permitting sensitivity to natural features; shorter streets and utility lines; more usable open space; more protection of natural resources; and if multi-family dwellings of any type are permitted in the cluster, there is the further advantage of mixed housing opportunities. While clustering may be advantageous in some areas, its utility in Revere is limited by the lack of the large tracts of open land which best utilize this form of development. A model ordinance for cluster development is included in this materials for informational purposes.

Both PUD and cluster zoning operates through the special permit authority in the city ordinance. The previous section of this report dealing with special permits should be referred to with respect to the requirements of an ordinance allowing the grant of special permits. As a PUD may include a number of different kinds of permitted uses the ordinance must give a good deal of discretion to the special permit granting

At the same time, in order to protect the community and provide for informed decision-making by the permit granting authority the ordinance must require sufficient information about the proposed development and it must set adequate standards to guide the permit granting authority.

It is of course possible to hedge the PUD bylaw with a number of specific limitations. However, since flexibility is imperative to successful mixed-use development, only a few such limitations should be made such as: a minimum size for the PUD parcel, a minimum degree of compatibility to existing uses, minimum requirements for floor area ratios and usable open space, parking requirements, and the opportunity for height and setback requirements.

In some cases it may be infeasible for a developer to submit up-front detailed and final plans for a large or otherwise complex PUD. In such a situation an optimum ordinance should allow for the phased submittal of information. In general, this allows for the approval and recording of a preliminary plan which covers a number of key decisions such as the number of lots, points of egress, road standards, the provision of services (sewer, water, etc.) the general disposition of the development and the amount of open land. A notation appears on such a recorded plan that further plans must be recorded before construction may take place. Prior to the issuance of building permits for any section of the PUD the special permit granting authority must approve the final plans. This procedure allows for the development to be approved in concept, with assurances that the actual development, perhaps years later, will adhere to the principles agreed upon.

The model presented below is for informational purposes only. A PUD ordinance, before it can be adopted, should be carefully incorporated in and coordinated with the existing special permit ordinance in the city.

The following PUD model was drawn from the Town of Lincoln.

PLANNED UNIT DEVELOPMENT DISTRICTS

Section 17-2.1: Use Regulations

In this district the following uses are permitted.

(a) One or more of the following uses:

1. Apartment houses, hotels or motels.
2. Stores, salesroom or showrooms for the conduct of retail business.
3. Wholesale showrooms with storage limited to floor samples only.
4. Restaurants or other places for the serving of food or beverages with dancing or entertainment permitted.
5. Theaters, places of public assembly and indoor places of amusement.
6. Business of professional office or agency.
7. Public or semi-public building.
8. Bank or other financial institution.
9. Consumer service establishments.
10. Parking structures.
11. Such accessory purposes as are customary or usual in connection with any of the foregoing purpose and are incidental thereto.

(b) Subject to approval by the Zoning Board of Appeals as to area suitability and traffic generating capacity, the following additional uses will be permitted:

1. Public garage or filling station, provided that no business or activity shall be carried on between midnight and 6 A.M.
2. Automobile agency or dealerships for new cars provided all parking and unloading shall be carried on off street, and further provided that the sale of used cars shall be incidental to the sale of new cars.
3. Public Parking lots provided **they are** hard surface and striped for orderly parking.

(c) All business in the District shall be carried on within a building or within 20 feet of the building unless a definitely planned area is shown on the building permit plans for the seasonal sale of goods, such as but not limited to, nursery stock, lawn furniture, garden supplies and Christmas trees.



#### Section 17-2.2: Heights and Area Regulations

The minimum lot area for a Planned Unit Development in a Planned Unit Development district shall be 200,000 square feet in one lot or a series of contiguous lots in individual ownership that equal 200,000 square feet. Lots in separate ownership of less than 200,000 square feet shall be developed in accordance with the requirements of the Business "A" District. Upon approval of a site plan, as required in Section 17-2.5, individual tracts of land in the Planned Unit Development in accordance with the approved Planned Unit Development site plan without the provision of new setbacks for front, side, or rear yards. Each tract or lot so leased or sold must make provision for a principal building, off-street parking, and landscaping or plaza area to serve it as required by this Section 17.

The buildings upon the land may be built to any street line provided the street exceeds 60 feet in width or the zoning on the opposite side of the street is not Residence "A" or "B". In all other areas, the buildings shall be set back one-quarter of the height of the average of principal buildings along the lot line but not less than 25 feet from all front, side, and rear lot lines. Underground parking may be built to the lot line in required setback areas provided it does not extend above the grade of the curb line. Parking structures inside required setback lines may utilize roof parking provided the structure contains at least two stories of parking above the average curb elevation of the nearest street to the structure.

The height of the buildings shall not exceed 200 feet above the average elevation of the curbs or the streets abutting the property. The buildings, parking structures, plazas, and arcades may cover all of this land not required for setbacks.

The floor area in all buildings in a Planned Unit Development shall not exceed a floor area ratio of 4.0 excluding parking structures, malls and plazas.

#### Section 17-2.3: Parking Requirements

In the Planned Unit Development Districts, adequate off-street parking shall be provided for all vehicles normally visiting the property at any one time. The parking may be ground level, underground, or in a garage structure.

Parking shall be provided at the following rates for the differing types of use within the Planned Unit Development District on land in the same ownership or on land within 200 feet to the nearest space of a principal entrance to the building that it will serve, and further, that a recorded agreement for the use of the land for parking for the reasonable life of the building will be provided.

<u>Use</u>	<u>Minimum Required Spaces</u>
1. Apartments	1.35 spaces/unit
2. Hotels and Motels	1 space/room+1 space for 3 seats in restaurants and meeting rooms.
3. Retail stores, financial institutions, consumer services, etc.	2.5 spaces for each 1,000 sq. ft. of floor space or fraction thereof.
4. Restaurants, theaters, or places of public assembly.	1 space for every three seats.
5. Offices, wholesale showrooms.	1.74 spaces for each 1,000 sq. ft.
6. For any use not specifically listed or any use permitted by the Zoning Board of Appeals.	1.5 spaces for each 1,000 sq. ft. of floor space or land utilized.
7. Each of the above uses will require a minimum space of -----	8.5 feetX20 feet plus aisle or maneuvering area.

All parking proposed for each building or use shall be within 700 feet of the building or use it is intended to serve. In every Planned Unit Development District containing ten acres or more, the developer shall be entitled to a reduction in the minimum required parking of 10% (ten percent) when two or more types of uses as listed in Section 17-2.1 are provided in the development and where the different types of uses will require parking at differing times.

#### Section 17-2.4: Landscaping and Recreation Area

Every principal building shall have a landscaped area around it adequate to provide an attractive setting for the building in accordance with the following schedule:

<u>Use</u>	<u>Landscaping &amp; Recreation Area</u>
1. Apartments	Provide a land area or plaza area equal to 40% of the ground areas of the building. Balcony areas shall count as provided in s. 15-D.
2. Hotels and Motels	An area equal to 30% of the ground area of the building with plazas, arcades, swimming pools to be counted.
3. Retail Stores	None required around the building if an enclosed mall or arcade is provided facing each retail store.

4. Office and Professional Buildings

An area equal to 30% of the ground area of the building with mall, arcade or plaza area to count as equal.

In all setback areas, all front, side, or rear yards shall be landscaped with grass, plantings, walkways, benches, etc. The details of the required landscaping and recreation areas shall be approved by the Planning Board in a site plan review prior to seeking of a building permit or action by the Board of Appeals. Where a Planned Unit Development complex abuts residential property, the developer shall provide appropriate plants or shrubs and fences or a combination of both.

Section 17-2.5: Site Plan Approval

Every developer in a Planned Unit Development District shall file with the Board of Selectmen an application for a site-plan review. The application shall include the material listed in "Contents of Plan" below and shall include any material required by the rules of the Board of Selectmen. The Board of Selectmen shall review the site plan and may grant an exception by special permit subject to the following conditions and safeguards. The Board of Selectmen for stated reasons may deny approval of a site plan or may approve a site plan without a finding of hardship.

The site plan shall be subject to the following conditions and the Board of Selectmen shall make a determination that the project meets these conditions:

1. The site of the structures or uses is in an appropriate location.
2. The use or uses when developed will not adversely affect the neighborhood.
3. That ingress and egress for traffic flow is designed properly so that there will be no serious hazard to vehicle or pedestrians.
4. That adequate parking facilities are provided for each use and structure in the development.

5. If a partial site plan is proposed for one building that will eventually be part of a larger development, than the site plan must show the relationship to the other proposed uses or structures and to the total development. Subsequent site plans must be submitted for each additional structure or complex of buildings.

Before granting a special permit for a site plan approval, the Board of Selectmen shall hold a public hearing notice of which shall be given in a local newspaper once in each of two successive weeks with the first publication to be not less than fourteen (14) days before the date of hearing, and to owners of all property abutting the proposed development or land in the same ownership of contiguous ownership, and to all property owners deemed by the Board of Selectmen to be affected thereby. The Board of Selectmen shall make its finding within sixty (60) days from the date of application. If the Board of Selectmen fails to issue its finding within sixty (60) days, the site plan shall be deemed approved and a special permit granted. The Board of Selectmen shall make a copy of the site plan, the application and any other supporting material submitted, immediately available to the Department of Planning and Community Development and to the Planning Board, and they shall have an opportunity to prepare written reports with recommendations to be submitted to the Board of Selectmen before or at the public hearing. The failure of either the Planning Board or the Department of Planning and Community Development to submit written reports or to give an oral report at the public hearing shall not invalidate action by the Board of Selectmen. A favorable decision by the Board of Selectmen shall require the votes of at least four members of said Board.

Contents of Plan: The site plan application and other data required to be submitted in triplicate shall contain the following data:

1. It shall be drawn at a scale of one-inch equals 20 feet unless another scale is requested and found suitable by the Department of Planning and Community Development.
2. The Plan shall be prepared by a land surveyor, professional engineer or architect.
3. The scale, date, and north arrow shall be shown.
4. The plan shall be certified by the land surveyor doing the boundary survey and the professional engineer architect on the location of the building(s), and measurements and further that the plan be signed under the penalties of perjury.
5. The corner points of the lot\* and the change of direction of lines to be marked by stone monuments, cut in

\* Refers also to series of contiguous lots under single ownership.

stone, stake and nail, iron pin, or other market, and shall be so marked.

6. Lot\* number, dimensions of lot\* in feet, size of lot, and width of abutting streets and ways.
7. Easements within the lot\* and abutting thereon.
8. The location of existing and proposed building(s) on the lot.
9. The dimensions of the existing and proposed building(s) in feet.
10. The distance in feet of existing and proposed building(s) from the lot lines.
11. The distance between buildings on the same lot.
12. The percent of the lot\* area covered by the building(s).
13. The average finished grade of each building.
14. The elevation above average finished grade of the floor and ceiling of the lowest floor of each building.
15. Topographical lines at two-foot intervals.
16. The use designation of each building or part thereof, and of each section of open ground, plaza, or usable roof space.
17. Numbering of parking spaces.
18. Height of all buildings above average finished grade of each.
19. Number of apartments, hotel rooms, meeting rooms, and restaurant and theater seats.
20. Total square feet of floor space for each use.
21. Dimensions and size in square feet of all landscape and recreation areas, and depiction of materials to be used (grass, 5-foot shrubs, etc.)

\* Refers also to series of contiguous lots under single ownership.

SAMPLE CLUSTER ZONING BY-LAW - Town of Lincoln

Exception for Cluster Development in an R-I Single Residence District

- a. For the purpose of promoting the more efficient use of land in harmony with its natural features and with the general intent of the Zoning By-Law, and to protect and promote the health, safety, convenience and general welfare of the inhabitants of the town, an owner or owners of a tract of land situated within the R-I Single Residence District, or a duly authorized agent thereof, may, in connection with the submission of a subdivision plan for Planning Board approval under the Subdivision Control Law or, if no such approval is required, after consultation with the Planning Board, make application to the Board of Appeals for a special permit excepting his plan from the lot area and frontage requirements of sub-paragraph B-1 through B-5 of this Section VI.
- b. After notice and public hearing, and after due consideration of the report and recommendations of the Planning Board, the Board of Appeals may grant such a permit provided that:
  - i. It finds that the proposed plan is in harmony with the purpose and intent of this By-Law and that it will promote the purposes of this section;
  - ii. The area of the tract of land to be subdivided is not less than ten (10) acres;
  - iii. The number of lots on the plan does not exceed the number of lots upon which dwellings could be constructed on the total land area of the tract which is usable for residential construction without reference to this sub-section 8, under the applicable laws of the Town and the Commonwealth, as determined by the Planning Board in its report made pursuant to paragraph d below;
  - iv. Each lot shall contain not less than 35,000 square feet;
  - v. Each lot shall have a minimum frontage of eighty (80) feet on a public or private way, except that a lot on the turning circle of a dead end street may have a frontage of not less than fifty (50) feet, provided that the shortest distance between side lot lines shall be at least

eighty (80) feet at every point more than forty (40) feet from the street line to the dwelling or main non-residential structure;

- vi. The minimum front yard shall be forty (40) feet;
- vii. The minimum side and rear yards shall be thirty (30) feet;
- viii. The minimum width of the lot at the building shall be one hundred sixty (160) feet;
- ix. Provision shall be made so that at least 35% of the land area of the tract, exclusive of land set aside for road area, shall be Open Land, and that the area of open land shall be such that when added to the total area of all lots smaller than 80,000 square feet, the total area shall not be less than the number of such lots multiplied by 80,000 square feet;
- x. Provisions shall be made so that Open Land shall be owned:
  - a. by the Town;
  - b. by the Lincoln Land Conservation Trust; or
  - c. in any other manner (including an association of the owners of the land) that may be approved by the Board of Appeals, with provisions for limited easements for recreational use by residents of the Town, provided that such ownership shall vest in the Town sufficient rights to enable it to enforce compliance with the restrictions imposed by the Board of Appeals as conditions of its special permit; and
- xi. Provision shall be made so that Open Land shall be restricted to any one or more of the uses allowed in an Open-Space Conservation District by right or appeal.
- c. The Board of Appeals may, in appropriate cases, impose further restrictions upon the tract, or parts thereof, as a condition to granting the special permit.
- d. In connection with an application for a special permit from the Board of Appeals under this section, the Planning Board shall submit, in writing, prior to the hearing, its

recommendation and report to the Board of Appeals. The Planning Board may supplement its report after the hearing. The report of the Planning Board shall include as a minimum:

- i. A determination of the area of the tract "usable for residential construction";
- ii. A determination of the number of lots upon which dwellings could be constructed without regard to this section;
- iii. A general description of the neighborhood in which the tract lies and the effect of the plan on the area;
- iv. The relation of the plan to the Long Range Plan of the Town;
- v. The extent to which the plan is designed to take advantage of the natural terrain of the tract;
- vi. The extent to which the proposed Open Land is of a size and shape and has adequate access to benefit the Town;
- vii. The Planning Board's opinion as to the overall design of the plan;
- viii. The Planning Board's recommendations as to the advisability of granting the special permit, and as to any restrictions which should be imposed upon the tract as a condition of such permit.

The Board of Appeals shall give due consideration to the report of the Planning Board and, where its decision differs from the recommendations of the Planning Board, shall state the reasons therefore in writing.

- e. Any condition set forth herein requiring a minimum lot area or frontage shall not be construed as purporting to limit the right of the Board of Appeals to grant a variance therefrom as permitted by law.



## V. Model Sign Ordinance

Revere, like most cities and towns in eastern Massachusetts, has an existing municipal ordinance regulating billboards, signs and other outdoor advertising devices (Chapter 3, Section 3-1 of Revere's Revised Ordinances). This ordinance was first adopted in 1953. Because of significant changes in the law relating to billboards and signs (as a result of new case law and statutory changes at the state and federal levels) the City may want to review its current ordinance, and consider alternative regulatory methods.

Article 50 of the Amendments to the Massachusetts Constitution, ratified by the people on November 5, 1918 granted to the Legislature the power to regulate and restrict advertising on private property within public view. The Legislature exercised that power in enacting G.L. Ch. 93 §§ 29-33 and G.L. Ch. 930 §§ 1-7, which provide a comprehensive scheme for regulating signs within the Commonwealth by the Outdoor Advertising Division. The Outdoor Advertising Division was established in its present form in 1955, succeeding agencies which have been regulating outdoor advertising within the Commonwealth since 1920. The Outdoor Advertising Board (OAB) is the rule-making body of the Outdoor Advertising Division.

General Laws C. 93, §. 29, authorizes the Board to prescribe standards for the proper control and restriction of billboards, signs and other advertising devices and to require that signs, subject to the Board's jurisdiction, be under a permit issued by the Board. Pursuant to the mandate contained in section 29, the OAB has promulgated regulations which require that all signs under the Board's jurisdiction be subject to a permit issued by the Board. It should be noted at this point that G.L. C. 93, §. 30 exempts all on-premise signs from the Board's permit power. The regulations promulgated by the OAB state that:

"(a) No permit shall be granted or renewed for a Sign which is not located in an area of a business character. An area shall be deemed to be of a business character only if, when viewed from the principal highway upon which the Sign is to face, both the following requirements are met: (i) at least two separate business, industrial or commercial activities are being conducted within a distance of 500 feet from the proposed location of the Sign, measuring from such proposed location to the buildings or parking lots or other places of actual business, industrial or commercial activity, and (ii) the area in which the Sign is to be located is not predominantly residential, agricultural, open space or a natural area. The term "business, industrial, or commercial activities" as used in this paragraph shall not include residential trailer parks, nor any agricultural, horticultural, or floricultural activities, nor any activity not visible from the principal highway upon which the Sign is to face."

and,

"(b) No permit shall be granted or renewed for the location or maintenance of a Sign within a city or town except where such location or maintenance is in conformity with applicable city and town ordinances and by-laws enacted in accordance with Section 29 of Chapter 93 of the General Laws; and no ordinance or by-law shall be deemed inconsistent with the rules and regulations of the Board on the ground that such ordinance or by-law prohibits the location or maintenance of a Sign which in the absence of said ordinance or by-law would be in conformity with the said rules and regulations.

As the abovementioned regulation (g) implies cities and towns, under G.L. C. 93, §. 29, may further regulate and restrict billboards, signs, and other devices within their limits by ordinance or by-law not inconsistent with §§. 29-33 or with OAB regulations.

Every billboard, not otherwise exempt, must obtain an annual permit from the OAB. This annual permit system has a very important legal consequence: since all the billboards in the state exist only on an annual permit, with no right to renewal, a billboard cannot under Massachusetts law acquire the status of a pre-existing non-conforming use. If the OAB or the local by-law require the termination of that billboard, neither the owner of the land nor the billboard owner has a right to claim "grandfather clause" protection. This was held in several cases, especially Donnelly & Sons Inc. v. OAB, (1972) 361 Mass. 746, 282 N.E. 2d 661.

Prior to 1978, no compensation for the removal of any Massachusetts billboard was required, except for certain takings by the DPW under G.L. C. 94D of billboards not meeting DPW design standards. The Surface Transportation Systems Act of 1978, amending the Highway Beautification Act of 1965 has changed the requirements for compensation in Massachusetts.

The Highway Beautification Act of 1965 was implemented in Massachusetts by G.L. Ch. 93D, which basically forbids off-premise signs within 660 feet of the nearest edge of the right of way of an interstate or federal primary system highway except in areas zoned commercial or industrial or in unzoned areas where permitted by joint Department of Public Works - Federal Highway Administration regulations.

This new federal law amending the Highway Beautification Act mandates compensation for any billboard in place as of the effective date of the law if the state fails to renew its license or otherwise orders its removal. States which fail to abide by this provision could face a reduction in federal highways funds. Monies to compensate owners of such billboards were to be funded 25% by the state and 75% by the federal government. However, federal funding for this purpose has been grossly inadequate and consequently no state funds have been appropriated, with the result that no action has been taken against billboards where a claim for compensation may be. The OAB estimates that as many as 2500 Massachusetts billboards may be in this category.

In light of this situation, any municipality which wishes stricter billboard control should act promptly to pass laws banning billboards in all or part of the community in order to prevent the proliferation of new boards, which may then become permanently protected under the federal law noted above.

The Supreme Judicial Court has ruled that a city or town may absolutely ban billboards. As of 1972, the Town of Brookline adopted a zoning amendment prohibiting any off-premise signs in any zoning district of the town. The OAB then refused under its Regulations to renew permits for 22 existing billboards. In Donnelly Sons Inc. v. OAB (the 1975 Brookline case), 369 Mass. 206, 339 N.E. 2d 709, the court upheld this prohibition as consistent with Am. Art. 50 (which does not mention prohibition); G.L. ch. 93; the OAB's regulations; and the Constitution. In a strongly worded opinion, the court stated that town by-law enacted primarily for aesthetic reasons are within the scope of the police power, because towns and cities have the right to a visually satisfying environment. Donnelly specially attacked prohibition in industrial and commercial areas, but the court felt that "urban residents are not immune to ugliness" and upheld the effort to improve these urban areas because, it reasoned, "to conclude that an area is too unattractive to justify aesthetic improvement would be both unreasonable and illogical." The Court also rejected a freedom of speech argument because billboards are so intrusive and the use for public interest advertising so limited.

As noted above the right of a landowner or businessman to erect on-premise signs has increased greater protection under Massachusetts law due to the exemption for such signs under G.L. ch. 93 and 930. This right, however, is limited somewhat by a Supreme Judicial Court opinion issued over forty years ago which is still controlling in controversies over on-premise signs.

In Attorney General v. J. P. Cox Advertising Agency, 298 Mass. 383 (1937) the court held that a sign must be "in immediate contact" with the business it advertises in order to qualify for an on-premise exemption from the provisions of Chapter 93. In the J. P. Cox case, a sign on the roof of a three-story building advertised the Perry Brothers cigar store which was located on the first floor. The court held that the sign was not an on-premise sign within the meaning of G.L. ch. 93, s. 30, and hence was subject to the Board's jurisdiction. The court state that:

"It is a fair inference that the business of Perry Brothers does not extend above their store on the first floor.... In the ordinary sense 'the premises' occupied by Perry Brothers on which they do business cannot be said to include the roof, and the store is so far removed from the sign that we think the words, 'the premises in question', as used in the statute cannot be stretched to include the store. The statute was

intended to exempt only signs in immediate contact with the business which they advertise. The sign is not within the exception of s. 30. J. P. Cox, supra, at 389-390 (emphasis added).

Additionally, a municipality may regulate on-premise signs under G.L. ch. 40 or ch. 40A authorizing, respectively, non-zoning municipal ordinances and municipal zoning ordinances.

Although the new zoning act is not clear on the point it appears to give pre-existing nonconforming on-premise signs indefinite protection against changes in the local zoning code. The zoning Act, G.L. ch. 40A states in section b "that the protection for nonconforming structures appearing in the old zoning enabling act shall no longer apply to billboards, signs and other advertising devices subject to ch. 93 and 93D", however, the Land Court has held in Fry v. Plymouth, Misc. 82393, February 1978, that since those chapters do not control on-premise signs, those signs are still given 'grandfather clause' protection.

A number of cities and towns have tried to "amortize" those old signs by giving them several years to conform. This should be attempted only under a nonzoning, ch. 40 by-law or ordinance which the court suggested in the Brookline case may be authorized by the home rule amendment. Court cases in other states have upheld ordinances phasing out signs over a period of years, providing the amortization period was commensurate with the owner's investment in the sign. See Art Neon Co. v. City and County of Denver, 488 F. 2d 118 (10th Cir. 1974).

A community, in its ordinance, can also prevent such signs from being reworded, redesigned or altered in any way unless such alteration brings it into conformity with the ordinance.

Since signs have in some context been held to be "structures", it is important that the local ordinance make it clear that a general provision often found in local zoning, containing permission to alter, enlarge or rebuild nonconforming structures, does not apply to signs. The sign ordinance should also contain a provision, authorized under ch. 40A, s. 6, that any such structure abandoned for over two years shall not be permitted to continue as a nonconforming use.

A sign ordinance should focus upon size, materials, lighting and placement when considering regulation of flashing and lighted signs. Revere should also consider the problem of regulating lighting generally. Business and residential premises are increasingly floodlit. Such lighting may easily fulfill its economic, aesthetic or safety purposes without annoying the neighbors if shielding is required as it is in the model for sign lighting. This does, however, require a city zoning, or ch. 40, ordinance to the effect that all such lighting shall be so shielded as not to cast light outside the premises.

However, some color, light and variety adds life to the surroundings, particularly in built up urban areas such as Revere. The extent to which lighting, color and signs in general are controlled must be considered with reference to overall municipal redevelopment and renewal projects.

The model presented on the following page is intended only for informational purposes. Should Revere feel that revision of its existing sign control ordinance is desirable the model should be carefully reviewed and appropriate changes made to tailor it to Revere's specific needs.

## ZONING ORDINANCE REGULATING SIGNS

(brackets indicate optional or variable sections)

### Section 1: Purposes

This ordinance is adopted for the regulation and restriction of signs within this city in order to protect and enhance the visual environment of this city and the safety, convenience and welfare of its residents. A major purpose of this by-law is to prevent or minimize damage to the environment.

### Section 2: Definitions

Accessory Signs: Any sign that advertises, calls attention to, or indicates the person occupying the premises on which the sign is erected or maintained, or the business transacted thereon, or advertises the property itself or any part thereof as for sale or rent, and which contains no other matter.

Non-Accessory Sign: Any sign not an accessory sign, including billboards.

Sign: Any permanent or temporary device, billboard, placard, painting, drawing, poster, letter, work, banner, pennant, insignia, trade flag, or representation used as, or the nature of, an advertisement, announcement, or direction; OR: Any device, structure or object in public view intended for visual communication.

Standing Sign: Any accessory sign that is not attached to a building.

Temporary Sign: Any sign, including its supporting structure, intended to be maintained for a continuous period of not more than (30) days in any calendar year.

### Section 3: Administration

- A. Enforcement: The (building inspector, City Council, Planning Board) is hereby designated as the Sign Officer and is hereby authorized to enforce this bylaw. The Sign Officer is authorized to order the repair or removal of any sign and its supporting structure which in his judgment is dangerous, or in disrepair or which is erected or maintained contrary to this by-law. Whenever a Sign Officer is designated, he shall send his name and address to the Outdoor Advertising Board.
- B. Energy Shortages: In the event of an energy shortage, the City Council is authorized in its discretion and following a public hearing, to order that all signs in the city

consuming electric, gas, oil or other forms of energy cease such consumption in whole or in part during such hours and for such period as the Council may designate.

#### Section 4: Permits and Fees

Except as provided in s. 8 for certain signs permitted in any district, no sign shall be erected, altered or enlarged until an application has been filed on the appropriate form furnished by the Sign Officer, containing such information as he may require, and until a permit for such erection, alteration or enlargement has been issued by him. Such permit shall be issued only if the sign officer determines that the sign complies or will comply with all applicable provisions of this bylaw and the state building code, Article 14. Such application may be filed by the owner of the land or building or any person who has authority to erect a sign on the premises.

The Sign Officer shall act within 30 days of receipt of such application together with the required fee if any. The Sign Officer's action or failure to act may be appealed to the board of appeals under the provisions of ch. 40A:

Applications for (lighted signs: signs which are larger than \_\_\_ ; signs in \_\_\_ districts\*) shall also be referred to the planning board, which shall make recommendations to the Sign Officer. The board may hold a public hearing if it deems necessary. If the board holds a public hearing, the Sign Officer's decision may be delayed until 45 days after the application.

A schedule of fees for such permits may be established from time to time by the City Council.

#### Section 5: Penalties

Whoever violates any provision of this ordinance or any lawful order of the Sign Officer shall be subject to a fine of not more than (\$100) dollars per offense. Each day that such violation continues shall constitute a separate offense.

#### Section 6: Non-Accessory Signs

Non-accessory signs shall not be permitted.

(Or: The Special Permit Authority, City Council, or Board of Appeals) may in its discretion permit the erection of non-accessory

---

\* This provision is for protection of specially sensitive districts (e.g., historical) or regulation of signs deemed possibly objectionable because of size, lighting, etc.

signs in areas zoned as business, commercial or industrial districts, for a term not to exceed (2) years if it finds that the sign complies with Sections 7 and 9 and with the purposes of the ordinance. If such permission is granted, the (SPA) shall impose such conditions relating to appearance, size, height above ground, proximity to residences, other signs, intersections, churches, public buildings and parks, and other factors as it may deem necessary to promote the purposes of this ordinance.)

#### Section 7: Design Requirements for All Signs

- A. Movement: No sign shall contain any moving, flashing or animated lights, or visible moving or moveable parts, except such portions of a sign that consist solely of indicators of time and/or temperature, or automatically changing message, provided that a sign with an automatically changing message shall be permitted only by special permit issued by the Special Permit Authority, upon recommendation by the Chief of Police.
- B. Illumination: No sign shall be illuminated between the hours of (11) P.M. and (6) A.M. unless, in the case of an accessory sign, the premises on which it is located are open for business. Signs may be illuminated only by the following means:
  - 1. By a white, steady stationary light of reasonable intensity shielded and directed solely at the sign, and not casting light on the premises;
  - (2. By interior non-exposed lights of reasonable intensity.)
- C. Color: No illuminated sign shall contain more than (3) colors nor shall any sign contain more than (3) colors. No sign shall contain red or green lights if such colors would, in the opinion of the police chief, constitute a driving hazard.

#### Section 8: Signs Not Requiring Permits

The following accessory signs conforming to this Section and Section 7, may be erected and maintained without a permit, in any district:

- A. One sign displaying the street number and/or name of the occupant of the premises not exceeding (1) square foot in area. Such sign may include identification of an accessory uses permitted in a residence district.



- B. Two "For Sale" or "For Rent" signs not exceeding a total area of (6) square feet, advertising only the premises on which the signs are located.
- C. One bulletin or announcement board, identification sign or entrance marker for each public entrance to the premises upon which a church, synagogue, or other institution is located, not exceeding (12) square feet in area, provided that there shall be no more than three such signs for each church or synagogue or other institution.
- D. One contractor's sign, not exceeding (12) square feet in area, maintained on the premises while construction is in process and containing information relevant to the project. Such sign shall be removed promptly after completion of the construction.
- E. One identification sign, not exceeding (12) square feet in area, at any public entrance to a subdivision or multi-family development.
- F. Directional signs, not exceeding (3 square feet).
- G. Signs limited solely to directing traffic within or setting restrictions of the use of parking areas, not exceeding (4) square feet.

#### Section 9: Signs Requiring Permits

In an area zoned as a (business, commercial or industrial) district, the Sign Officer may issue permits for signs conforming to s. 7 and this section.

##### A. Attachment of Signs:

- i. The sign shall be firmly affixed to a **building**.
- ii. The sign shall not project beyond the face of any other wall of the building, or above the top of the wall to which it is attached or be located on the roof of any building.
- iii. The sign shall not project more than twelve inches (in the case of a sign parallel with the wall, or four feet in the case of a sign projecting perpendicular from the wall) from the face of the wall to which it is attached.

- B. Size: The area of the sign shall not exceed (15) percent of the area of the wall on which the sign is located.

- C. Number: There shall be not more than one exterior sign for each business establishment except that if there is more than one public entrance to any such business establishment, there may be one additional secondary sign for each such entrance; provided that the aggregate area of all such secondary signs shall not exceed 10 square feet.
- D. Directory: In addition to the foregoing sign or signs, one directory of the establishments occupying a building may be affixed to the exterior wall of the building at each public entrance to the building. Such directory shall not exceed an area determined on the basis of one square foot for each establishment occupying the building.
- E. Window Signs: Signs painted or placed on the inside of the glass of a window may be permitted in addition to the above, provided that the aggregate area of such signs does not exceed (20) percent of the area of the window glass.
- F. Temporary Signs: Temporary signs which comply with this ordinance may be permitted in addition to the above. Before a temporary sign (other than a temporary sign placed in a window) shall be erected or displayed, there shall be deposited with the Sign Officer the sum of (\$25) dollars for each sign. In the event of failure to remove the sign within the period prescribed, the Sign Officer shall apply the deposit towards the cost of removing the sign. Temporary signs which do not comply with this ordinance may be authorized by the Sign Officer for public or charitable purposes.
- G. Political Signs: Political signs shall be allowed only at official headquarters of the candidate. Locating political signs in any other area of building is prohibited.

#### Section 10: Nonconforming Accessory Signs

Accessory signs legally erected before the adoption of this ordinance which do not conform to the provisions of this ordinance may continue to be maintained, provided, however, that no such sign shall be permitted if it is, after the adoption of this ordinance enlarged, reworded (other than in the case of theatre or cinema signs or signs with automatic or manually changing messages), redesigned or altered in any way excluding repainting in a different color, except to conform to the requirements of this ordinance and provided further that any such sign

which has deteriorated to such an extent that the cost of restoration would exceed thirty-five percent of the replacement cost of the sign at the time of the restoration shall not be repaired, rebuilt, or altered except to conform to the requirements of this ordinance. Any exemption provided in this section shall terminate with respect to any sign which:

- A. Shall have been abandoned for at least two years;
- B. Advertises or calls attention to any products, businesses or activities which are no longer sold or carried on, whether generally or at the particular premises; or
- C. Shall not have been repaired or properly maintained within thirty days after notice to that effect has been given by the Building Inspector.

SECTION FOUR

Wetlands Protection Planning

Memorandum to the Conservation Commission

MEMORANDUM

July 13, 1979

TO: Conservation Commission of the City of Revere  
FROM: Terrence Geoghegan, CZM Study Director  
SUBJECT: Wetlands Protection Planning

Introduction

Task Four, Wetlands Protection Planning, of the Community Assistance Grant that the City of Revere was awarded by the Massachusetts Coastal Zone Management Office calls for the sharing of information, mapped data and land use management policies.

This memorandum will address a number of key issues relative to the ongoing performance of the Commission.

The landuse and wetland management policies are contained in Section Two of the Coastal Zone Management Study for the City of Revere.

Clean-Up Campaign

Many cities have both a spring and fall "clean-up" weekend. Civic groups are mobilized, the City provides the trucks and other equipment, schedules for bulk pick-up are posted, illegal dumping areas are identified and assigned work crews, and it is usually topped off with a large outdoor barbecue.

It is recommended that the Conservation Commission take the lead in organizing such a campaign. The Commission's staff attorney, supplemented with some CETA help could take care of the logistics. In a city such as Revere where there are a large number of social organizations, the manpower appears to be readily available.

In addition to resulting in a cleaner city, the campaign should bring about a recognition of the benefits of keeping the city clean and of the benefits of a clean drainage system and functioning marsh.

Deed Restrictions

The paper contained in the Appendix of this memo, discusses the donation of land, conservation restrictions, and other legal techniques designed to limit development in key environmentally sensitive areas.

The Conservation Commission should send copies of this paper to all of the landowners of wetlands in the City. The Commission should then decide which area is the most critical in terms of the Commission's

policies, and begin a dialogue with the landowner designed to remove that land from development.

This approach is being used by a number of municipalities in the Commonwealth. Some of them use a combination of state Self-Help and local funds to purchase land or a conservatin restriction on land.

#### Local Ads

The Conservation Commission should approach the local print and television news media regarding a public service advertising program designed to increase the awareness of the need to protect wetlands. The local cable network might provide a format for a round table discussion in which officials from the state and other municipalities, with experience and knowledge regarding wetlands could be guest speakers.

#### HUD Flood Plain Rate Maps

One element of the federal Flood Insurance Program is the existence and adoption of an accurate Flood Plain Map. The Department of Housing and Urban Development has hired a consulting firm to prepare these maps for the Commonwealth.

Due to the large impact the proposals for the Revere Beach Connector, North Shore Transit Improvement Project, Revere Beach Reservation, County Ditch Improvements, and the Revere Beach Development Project will have on the configuration of the flood-plain and flood-way, members of the Conservation Commission should contact HUD in the near future in order to coordinate with the map consultant.

#### Freedom Realty Development

Although this area is just outside of the CZM defined boundary for this study, the development that is proposed will require a careful review by the Conservation Commission.

The proposal put forth by Leonard Silver for a combination warehouse and manufacturing facility will have a number of positive attributes for the City including jobs and taxes. This will have to be weighed against the costs associated with adequately handling the drainage and ameliorating other environmental problems.

The drainage system on the Freedom Realty site is in part a system by the MDC in 1951. Jurisdictional and design problems will have to be addressed in the Order of Conditions.

#### Membership Training

It would be very useful to the proper functioning of the Conservation Commission if the membership could arrange for a training session, utilizing the resources of the Conservation Law Foundation or the Massachusetts Audubon Society.

In addition, the CZM Study Staff will provide a special briefing of the results of this study effort, for members of the Commission.

#### Chairmanship of the Commission

Although this area has been debated by the Commission and is not, strictly speaking, the province of this study, we feel that the obvious conflict of interest has to be recognized. The position of the Chairman should not be held by the Superintendent of the Department of Public Works. Especially, when the DPW has been involved in filling the wetlands in contravention of Chapter 131, Section 40.

The Superintendent should resign from the chairmanship, but retain membership in order to voice his concerns over the work of his department, and to provide a local DPW viewpoint on proposals.



Incentives to Landowners for Gifts of Land  
and Lesser Interests in Land for Conservation Purposes

INCENTIVES TO LANDOWNERS FOR GIFT OF LAND  
AND LESSER INTERESTS IN LAND FOR CONSERVATION PURPOSES

This report briefly describes the economic advantage to a land-owner for the donation of his land to a qualifying charitable organization, (including governmental bodies). The economic advantages can be classified primarily as tax savings in the form of income taxes, capital gains taxes, estate and inheritance taxes, and property taxes.

In the era of increasingly complex regulation of private enterprise, the donation of land to public or private bodies concerned with its proper protection and use, offers an alternative to development which can be mutually advantageous to both the community and the land-owner. Certainly, much undeveloped land in Revere faces stricter control over its use at the local, state and federal levels. Local, regional, state and federal concerns over flooding, water quality, erosion and the protection of the remaining fish, wildlife and plant communities will make the use of land related to these public interests difficult. At the same time, undeveloped land in an urban area such as Revere, probably has a greater fair market value than in less developed areas, particularly under existing zoning ordinances. As controls become stricter this market value will drop. Depending upon individual circumstances, the donation of undeveloped land in Revere to the City or a charitable organization may be the most financially prudent decision a land-owner or a land investor could make at this time. Considerations, such as the income, assets and aims of the land-owner will, of course, be the controlling factors. Any land-owner considering making a donation of land should only do so after detailed consultation with their attorney, accountant and the recipient of the donation.

Under federal income tax laws the land-owner donating land to a qualifying charitable organization for conservation purposes can deduct up to 30% of their adjusted gross income for such a donation, (corporations, however, may only deduct 5% of their taxable income for such contributions). Any excess value over the 30% limitations (5% for corporations) can be carried over and deducted in the next succeeding five years. Undivided interests in land can also be given and deducted if the total value of land is too great to obtain the optimum value of the deduction. No similar deduction is allowed under gross income tax law.

In addition to the income tax deduction available, if the land is given to a public charity (or government body) no capital gains taxes, federal or state need be paid, regardless of how much the land has appreciated in value. Remember that the deduction from income is based on the full present fair market value.

To illustrate this tax treatment of land donations let us assume that a 40 acre parcel of land, purchased for \$4,000 now has a fair market value of \$40,000. The taxpayer (land-owner) has a taxable income of \$70,000/year and can either sell the land at its fair market value, or

donate it to a public charity.

Based upon his income this land-owner would pay annual Federal income taxes of \$32,790. If he sold the land (and assuming for this purpose that he has net long term capital gains of at least \$50,000) he would have to pay Federal capital gains tax of \$12,040 plus Massachusetts capital gains tax of \$2,880.

If instead the land-owner donated the land to a public charity he could deduct 30% of \$70,000, or \$21,000, in the year he makes the donations and the remaining value of the land \$19,000, in the following year. He would save \$13,200 and \$11,980 respectively on his federal income tax (remember no similar deduction is allowed under Massachusetts income tax laws).

The net result to the taxpayer is as follows:

Value of property		\$40,000
Saving of Fed capital gain tax	\$12,400	
Saving of Mass capital gain tax	2,880	
First year saving Federal income tax	13,200	
Second year saving Federal income tax	11,980	
<u>Total tax saving:</u>		<u>\$40,100</u>

As you can see in this fact situation the taxpayer actually makes a net cash gain if he donates his property tax rather than sell it!

Under the Tax Reform Act of 1969 an alternative method of deduction for charitable contributions was made possible. It increases the amount which would be deducted each year from the previous limit of 30% of the adjusted gross income if the taxpayer first reduces the value of the contribution to be deducted by one-half the amount of its capital gain. Obviously this method would only be feasible where the value of the property was more than 30% of income where capital gains are relatively small. The use of this alternative method of deduction should be carefully evaluated by the land-owner and his attorney. In most cases the election will probably not be warranted, but in the proper circumstances it can provide substantial benefit to a land-owner.

Another economic advantage to a land-owner in donating land to a public charity is the property tax saving. Parks and nature preserves held by public charities are exempt from property tax in Massachusetts, and of course, land given to the city or state is removed from the tax roles.

For many land-onwers the most important tax saving may be in the

saving of estate taxes. Land which is willed to a qualified charity will not be subject to federal or state estate or inheritance taxes.

It should be noted that a land-owner need not donate his entire interest on the land. If a land-owner feels that he must receive some cash on the disposition of his land he would sell it for conservation purposes for less than its fair market value. In this way the initial investment in the land may be directly recovered, and the differences between the fair market value of the land and its "bargain sale" price can be deducted for federal income tax purposes as a charitable contribution. In order to secure this deduction, the land-owner should be sure to have the property appraised by a qualified professional before the sale, and to declare the charitable intention in the sale contract. In terms of capital gains tax treatment when property is sold for less than its fair market value its cost basis must be allocated proportionately between the bargain sale price and the amount of cost basis allocated thereto must be recognized as a capital gain.

Finally, a land-owner may retain ownership in his land while giving up an interest in that land which will entitle him to take advantage of many tax breaks noted above. This can be done through the use of the Massachusetts Conservation Restriction Act (Ch. 666 of the Acts of 1969). A conservation restriction is a legally enforceable agreement, executed under Chapter 184, S.S. 31-32-33 of the Massachusetts General Laws, between a land-owner and a governmental body or charitable organization by which the owner of open land promises to keep it substantially free of future development. Such a restriction constitutes an "interest in land" which "runs with the land" and is binding upon subsequent owners in the perpetuity, unless the agreement itself states that the property is only restricted for a certain number of years. The land remains in private ownership and may be freely donated, sold or willed, subject to the restriction; and the public will have no rights to enter it unless the agreement grants public access. This agreement, called a "deed" or "conservation restriction", sets out in detail what a land-owner can and cannot continue to do with his land. These terms are extremely flexible and negotiable subject only to the limitation that the restriction must be "appropriate to retaining land or water areas predominantly in their natural, scenic or open condition, or in agricultural, farming or forest use". A conservation restriction, while usually given in perpetuity may be limited to only last for a certain number of years. Of course the property tax relief granted for such a short term restriction will not be as great as for a perpetual restriction. Also, no federal income tax deduction is available and the donor may have to pay a federal gift tax.

The tax advantages to a land-owner in giving a conservation restriction are similar to those available for the donation of land, discussed above. The value of the conservation restriction may be deducted from the land-owner's adjusted gross income, up to 30% of the taxpayer's

adjusted gross income, (with the 50% alternative deduction mentioned above, also available). In terms of federal estate tax reductions a permanent conservation restriction left by a will or given during a land-owners life-time will qualify as a charitable deduction and will effectively reduce estate taxes. Nor will there be any gift tax due on such a donation if it is a perpetual conservation restriction.

A conservation restriction can also result in a significant reduction in real estate taxes. Land subject to a conservation restriction must be assessed as a separate parcel of real estate. Because state law requires that real estate be assessed for tax purposes at its full, fair cash value, this value and hence the assessment should be reduced after the imposition of a conservation restriction. How market value is diminished depends on several factors, including the cash value of the land before the CR, the severity of the restrictions imposed and the rights which the land-owner retains. While the real estate tax reduction can be as much as 95% of the market value assessments no blanket statement can be made on tax reductions because no uniform guidelines are currently available.

The preceding discussion has attempted to briefly describe the tax advantages to land-owners for giving land for conservation purposes. For land-owners wishing to know more, two booklets put out by the Conservation Law Foundation of New England, Inc. (3 Joy Street, Boston, MA) are recommended. They are entitled "Gifts of Land for Conservation" and "Conservation Restrictions". Land-owners considering donating land for conservation purposes should, of course, consult with their attorney and accountant in order to make maximum use of the tax advantages available. Further assistance is also available from the Conservation Law Foundation and the Major's Office of Joint Development in the Revere City Hall.

SECTION FIVE

Coordination of Flood Control and Drainage Studies

Status Report on Flood Control Activities

## INTRODUCTION

This report represents a summary of the various "flood control" studies and projects that are underway or are proposed for the City of Revere. It was prepared as a policy guide for the Mayor, City Council, and Conservation Commission so that they might have a comprehensive referenced document which would explain each activity. This summary can be used by each of the above-mentioned offices as it deliberates proposals for development.



TABLE OF CONTENTS

<u>ITEM</u>	<u>PAGE</u>
Sales Creek Flood Control Project .....	1
Beachmont Seawall Repair .....	2
Roughan's Point Seawall Repair .....	3
Massachusetts Homeowners Floodproofing Program .....	4
Wetlands Restriction Program .....	5
"Illegal Filling of Wetlands" .....	6
Revere Beach Resanding Study .....	8
Report on Flood Control and Navigation .....	10
Revere Beach Reservation Master Plan .....	11
Final Environmental Impact Statement, Revere Beach Development Project .....	12
Coastal Zone Management Community Assistance Grant Study .....	13
Venditto Road Area Drainage Improvement Study .....	15
Leverett Avenue Flooding Study .....	16
Facilities Plan for Sanitary Sewer Improvements .....	17
Economic Development Administration Funds .....	19
Community Development Block Grant Funds .....	21
Status Report, 1975 Storm Drainage Improvement Study, Somerville Engineering .....	23
Status Report, County Ditch Cleaning .....	24

PROJECT: Sales Creek Flood Control Project

CONTACT(S): Senator Francis D. Doris  
State House  
Boston, Massachusetts

SYSNOPSIS: In 1971, legislation was enacted which directed the Division of Waterways to construct a culvert in the Sales Creek Area. As a result of the legislation, a detailed study and engineering analysis was undertaken by Andrew Christo Consulting Engineering, Boston.

That study indicated that the scope of work required was far in excess of simply constructing a culvert. Construction estimates at that time place the project cost of \$3.1 million. Included in the project scope were plans for Bennington Street pumping station.

After a lengthy review by the Division of Waterways staff the project was nearly abandoned as the project cost to project area benefit ratio in dollar terms, was felt to be far out of proportion.

At that point Senator Davis and Mayor Colella entered lengthy negotiations with state officials which lead to postponement of a final decision of whether or not the project would be implemented until such time as the cost-benefit ratio could be re-evaluated in light of new information such as the amount of damage caused by the 1978 and 1979 floods.

Since the time when this new information was introduced and evaluated, Senator Doris has been successful in eliciting the cooperation of Suffolk Downs Race Track for land easements and financial participation in the project which further improves the cost benefit ratio.

COMMENTS: According to Senator Doris, if the tentative agreements reached with Suffolk Downs can be finalized and formal agreements entered in the near future, elements of the project originally targeted for completion in 1976 could enter construction in the latter part of 1979 or the early part of 1980.

PROJECT: Beachmont Seawall Repair

CONTACT: Mr. Zellen  
Engineering Department, M.D.C.  
727-5264

SYNOPSIS: The M.D.C. project, to repair/restore the seawall in Beachmont (extending from Leverett Avenue into Winthrop) was awarded to Bonacorso Construction Co., for \$470,000.

This project will restore the structural integrity of the wall along with some sand replenishment.

The project is now 75% complete; with a final completion date of May 31, 1979.

COMMENTS: This wall protects the seashore in Southern Revere and Winthrop; the major portion of the contract is for the seawall in Revere.

PROJECT: Roughan's Point Seawall Repair

CONTACT: Mr. Jack Hannon  
Division of Waterways  
Environmental Quality Engineering

SYNOPSIS: An appropriation of \$47,000 has been designated to upgrade the flood control facility between Elliot Circle and Simpsons Pier.

This project will reset the rocks and increase the structural integrity of the barrier.

COMMENTS: Funding could only be obtained for a limited project designed to upgrade the flooding facility.

The project offers increased protection to the area but, will not provide the solution to Beachmont flooding problems.

Project should be completed by June 1979.

PROGRAM: Massachusetts Homeowners Floodproofing Program

CONTACT: Executive Office of Consumer Affairs  
Floodproofing Program  
One Ashburton Place - Room 1519  
Boston, Massachusetts 02108  
727-0014

SYNOPSIS: The Massachusetts Homeowners Floodproofing Program is designed to provide financial assistance in the form of grants and/or low interest loans and technical advice to low and moderate income homeowners living in the 100 Year Flood Plain Zone. This program will allow you to make your home safer from flooding and make it easier for you to recover from a flood.

COMMENTS: Additional technical assistance can be obtained at the Community Development Office at Revere City Hall.

PROGRAM: Wetlands Restriction Program

CONTACT: Jay Paul Satin  
Staff Attorney  
Conservation Commission  
City Hall  
Revere, Massachusetts 02151  
284-3600/Ext. 121

SYNOPSIS: The program referred to above, is a general heading underwhich one would find the donation of land by a private party to a "qualified non-profit entity", the sale of land by a private party to a "qualified non-profit entity", or the enactment of a "deed restriction" which would limit development.

The Conservation Commission is listed as the contact, because in many cities and towns in the Commonwealth, the Conservation Commission is the recipient of the "donated land".

The "purchase" method usually involves a federal grant. The "donation" method involves cooperation between the landowner, the Conservation Commission and the Board of Assessors.

COMMENTS: It is suggested that the Conservation Commission take the initiative and approach the owners of significant fresh and salt water wetlands in order to determine which parcels could come under this program.

PROBLEM: "Illegal Filling of Wetlands"

CONTACT: Jay Paul Satin  
Staff Attorney  
Conservation Commission  
City Hall  
Revere, Massachusetts 02151  
284/3600/Ext. 121

COMMENTS: The Revere Conservation Commission has under its jurisdiction the filling of wetland areas. Filling in wetlands is not per-se illegal. If a proper Notice of Intent has been filed and an Order of Conditions granted by the Commission (after having adhered to all administrative regulations, including a public hearing), filling may proceed as granted and if granted under the Order of Conditions. However, the Commission has a policy, following a policy of CZM and DEQE of not allowing filling of saltwater wetlands.

The "illegal" filling as posed in the question will be interpreted to mean all filling not done subject to an Order of Conditions. It is the Conservation Commission's policy that any such illegal fill is strictly prohibited. The reasons for this are obvious: drainage problems; health hazards and eye-sores among others. The difficulty with this illegal filling is enforcement in stopping it. Several reasons make this an onerous task for Revere.

1. Wetlands are an inviting area to dispose of trash, fill, etc.
2. Revere is in close proximity to the RESCO plant. Some fill is rejected by RESCO and upon arrival some people find their price in accepting refuse too high. Thus, this rejected and other type fill is dumped in Revere's wetlands for free.
3. The lack of knowledge of many residents of the important functions wetlands play. Many people believe the only good would be to fill these areas.

COMMENTS: 4. Revere has an expansive area of wetlands  
(continued) but little enforcement capabilities.

The Conservation Commission has tried several methods to correct the illegal dumping situation.

1. Court action has been taken in several instances.
2. Amicable agreements have been reached with certain violators who had done it innocently.
3. Newspaper advertising has been published asking residents to take notice of any illegal dumping and report it to the Commission.
4. Seeking funds to clean-up areas that have been subject to too much accumulated illegal fill.
5. Surveillance by members of the Commission.



STUDY: Revere Beach Resanding Study

CONTACT: Harman Guptil  
Chief  
U.S. Army Corps of Engineers  
Waltham, Massachusetts  
894-2400

SYNOPSIS: This study was designed to explore the problems associated with the resanding of Revere Beach. The design that the Corps is working on, consists of a 200' width beach between the seawall and mean high water. At the seawall, the height of the beach will be 18' above mean low water.

The current estimate is for the addition of 1 million cubic yards of sand. A source of sand has not yet been identified, however the Corps is looking at the old I-95 embankment in the Saugus Marsh. The cost of the project will be split 50-50 between the federal government and the MDC.

Mr. Guptil says (February 20, 1979) that the Corps has completed the General Design Memorandum and is waiting for the MDC to complete its Master Plan for the Revere Beach Reservation and the Commission's separate study on the needs for beach resanding.

When the MDC completes its work, and agreement has been reached on the design for resanding, the Corps will forward its General Design Memorandum to Washington for a Congressional Appropriation for construction funds.

On an optimistic timetable, construction could start between one and two years from now.

COMMENTS: The resanding of Revere Beach is critical, not only from the point of view of having a nice beach, but, a new beach will cause the waves to break before they reach the seawall. This will reduce the amount of ocean water that ultimately overtops the seawall and finds its way into the City's storm drainage system.

COMMENTS: This will be very important in terms of reducing the  
(continued) flooding that occurs at Parcel H. Without the re-  
sanding, it will be very difficult for the City to  
successfully market the Joint Development Parcel.

It is recommended that the City keep itself appraised  
of the progress of the work of both the Corps and the  
MDC. Furthermore, when an appropriation is being  
considered by Congress, the City should consider pre-  
paring written testimony over the signature of the  
Mayor, to be submitted by the Congressional represen-  
tative.

STUDY: "Report on Flood Control and Navigation, Saugus and Pines River Basin and Adjacent Coastal Areas."  
(June 1979) Update of this report in light of the February, 1978 Blizzard and January 1979 Flood.

CONTACT: Joseph Miliano, P.E. F. William Swaine  
Civil Engineer Civil Engineer  
Planning Division Planning Division  
U.S. Army Corps of Engineers  
Trapelo Road  
Waltham, Massachusetts 02154  
894-2400

SYNOPSIS: Due to the recent frequency of flooding in the City, the New England Division has been authorized to do a Phase I update of the 1970 report. The Phase I report will look at the cost/benefit ratio to see if the benefits from a Corps project would outweigh the costs. The Phase I analysis should be done by April 30, 1979. Robert Krinsky of the Community Development Office has been working with the people from the Corps by providing data on the financial impact of the 1978 and 1979 storms. Robert Furlong, City Planner, is working on obtaining an accurate set of topographic maps for the City so that the Corps can design flood control structures for the coastal sections of the City.

If the Phase I report results in a "positive" cost/benefit ratio, then a detailed study will be initiated by the Corps. This second phase will be completed by the end of the summer.

Following this phase, the proposed project will require a Congressional Appropriation for final design and construction.

COMMENTS: Since the new/cost benefit ratio is the key to this process, the City has asked Mr. Milano to allow Paul Rupp, Flood Coordinator to review the Phase I report in draft form. This will allow the City the opportunity to "augment" the figures on the financial impact of the storms.

If the study passes the cost/benefit ratio test, then the Mayor and City Council should work closely with the Senators and Congressman to insure an appropriation.

STUDY: Revere Beach Reservation/Master Plan

CONTACT: Henry Higgot  
Project Manager  
Revere Beach Reservation  
Metropolitan District Commission  
20 Somerset Street  
Boston, Massachusetts 02108

SYNOPSIS: The consulting engineering firm of Fay, Spofford and Thorndike is under contract to the MDC to design improvements to the seawall between Eliot Circle and Oak Island Street, so that the wave overtopping problem will be greatly reduced.

The present thinking calls for the creation of a second seawall on the western side of Revere Beach Boulevard. Two holding basins, designed to trap the seawater, will be built between the first and second seawalls. These basins will be drained by a large pipe which will be run out to Broad Sound. The system is being designed to work in both a high and low tide situation, and by the force of gravity.

In addition to the "holding basins", the current plans call for a regrading of the land between the Boulevard and Ocean Avenue. The new park, in that area will act as an earthen dike in the event the "holding basins" fail.

COMMENTS: The design appears to be well thought out. If properly executed, it will alleviate the single largest source of flooding in the drainage area of the Eastern Branch of the County Ditch.

The City may have to lobby for the funds to carry out this project once the Master Plan has been approved and released.

STUDY: "Final Environmental Impact Statement, Revere Beach Development Project" prepared for the Metropolitan District Commission by Camp, Dresser and McKee. (June 1978)

PROJECTS: This report covers the impact of hypothetical development on the existing drainage system and flooding conditions. Projects which have been analysed include; the Alba project for the South Lot, the Joint Development of Parcel H, the Alba project for the North Lot, and the new MDC park.

CONTACT: Henry Higgot  
Project Manager  
Revere Beach Reservation-  
Metropolitan District Commission  
20 Somerset Street  
Boston, Massachusetts 02108

SYNOPSIS: This study provides an engineering discussion of the causes of flooding in the project area, a discussion of the impacts of the proposed projects on flooding, and a range of solutions. This material is contained in Chapter V, Appendix D and Appendix J.

COMMENTS: The report should be used to compare detailed proposals for projects against the estimated impacts explained in the report. For example, the assumption in calculating the storage volume displaced and the estimated increased in flood elevations was that each of the above mentioned areas would be filled to 10 feet above MSL. It is expected that the actual filling will be somewhat less. The plans and materials submitted as part of the Notice of Intent for Alba's South Lot project indicated filling only in the area of the "foot print" of the buildings. Care in analysis will have to be taken when evaluating any proposal.

The discussion of the existing drainage system and possible recommendations for improvements is being used by the consulting engineers to the CZM study.

STUDY: Coastal Zone Management  
Community Assistance Grant Study

CONTACT: Terrence Geoghegan  
Revere Beach Development Office  
City Hall  
Revere, Massachusetts 02151  
284-3600/Ext. 114

SYNOPSIS: The Massachusetts Coastal Zone Management Office awarded the City of Revere a \$20,000 grant to undertake a Land Management Study of certain critical wetlands within the City. Work started January 2, 1979, and is expected to be completed by July 30.

This study will consist of five tasks. The first task is an environmental analysis which will consist of the preparation of an annotated bibliography of information regarding the hydraulics, tidal levels, flood history, soil types, water quality, wetlands characteristics, marine productivity and vegetation of the project area.

This will be supplemented with a series of maps depicting land use, the extent of flooding and the Department of Environmental Management's wetland maps. In addition, there will be a discussion of outstanding questions and additional studies that may be required.

A set of Land Use Policies will be developed as Task Two. These policies will be discussed in an open public forum and will serve as the basis for legal recommendations.

Task Three, the Implementation Program will analyze the City's existing land use management programs and will make recommendations for improvement.

The Fourth Task requires the sharing of information with the Conservation Commission and the preparation of a memorandum appraising the Commission of this Study.

The last task will consist of coordinating the flood control and drainage studies of the various public

SYNOPSIS: and private entities that are proposing projects in  
(continued) the study area. In addition, this task will involve  
an engineering analysis of the inadequacies of the  
Eastern Branch of the County Ditch.

COMMENTS: Throughout the study, efforts will be taken to involve  
the Citizens Advisory Group in the recommendations for  
this study. It will be important to develop a broad  
consensus so that the City Council will act positively  
on the implementation program.

STUDY: Venditto Road Area Drainage Improvements Study

CONTACT: Mr. Forrest C. Lindwall  
Associate  
Hayden, Harding & Buchanan, Inc.

SYNOPSIS: This \$8,200 City funded study, survey and final design project started and completed in 1978 developed plans for alleviating local house flooding in the Venditto Road area. The City is currently securing permanent drainage easements for the installation of catch basins and pipes and will advertise the project for construction forthwith. The construction costs are estimated to be approximately \$50,000. The construction will take 3 months and the City will bear the project cost.



STUDY:           Leverett Avenue Flooding Study

CONTACT:        Mr. Forrest C. Lindwall  
                  Associate  
                  Hayden, Harding & Buchanan, Inc.

SYNOPSIS:       This \$3,400 study funded by the City was started in February, 1979 and completed in April, 1979, and was designed to determine a solution to the chronic flooding conditions along Leverett Avenue from Dolphin Avenue to BROADSOUND Avenue.

The final Report recommends installation of catch basins and pipes which would tie directly into the MDC pump station at the opposite end of BROADSOUND Avenue. In so doing, the pump station would be operational during rainstorm events as well as during ocean flooding from major storm events. The estimated construction cost is \$203,000 and there are no current state or federal grant monies for such a project.

COMMENTS:       Since certain areas of MDC roadways drain into the flooding areas and other MDC roadways drain into the overburdened Sales Creek Drainage System the City should consider requesting financial support from the MDC to share the construction cost of this project.

STUDY: Facilities Plan for Sanitary Sewer Improvements

CONTACT: Mr. Forrest C. Lindwall  
Associate  
Hayden, Harding & Buchanan, Inc.

SYNOPSIS: This three STEP program to rehabilitate the City's sanitary sewers (does not include storm drainage) will provide relief from the back-ups and overflows that are prevalent throughout many areas of the City. The following page lists the program schedule and funding commitments.

STEP I, Phase I, begun in 1975 and completed in 1977, consisted of an Infiltration/Inflow Study which determined the amount of extraneous flows (other than sanitary wastes) present in the sewer system and recommended a rehabilitation program to replace broken pipes, seal major cracks which allow groundwater to leak in and disconnect illegal storm water pipes from the sanitary sewer pipes.

STEP I, Phase II, begun in 1979 is the Sewer System Evaluation Survey (SSES) which will identify and locate those sewer pipes which are in need of repair through the use of manual inspections, smoke tests, and television inspection.

STEP II, design follows the SSES and will provide construction drawings for the sewer rehabilitation program.

STEP III, construction follows design.

COMMENTS: The important factor for the City is to insure the availability of its funding share to convince state and federal officials that the City's commitment is solid and deserving of continued funding by these agencies.

REVERE, MASSACHUSETTS  
FACILITIES PLAN  
FOR  
SANITARY SEWER IMPROVEMENTS

SCHEDULE

	START	COMPLETE
STEP I		
Phase I- Infiltration/Inflow	May 1975	Feb. 1977
Phase II-SSES	Feb. 1979	May 1980
STEP II		
Design	Aug. 1980	Jan. 1981
STEP III		
Construction	Mar. 1981	Jan. 1982

FUNDING

	TOTAL	US	MASS	REVERE	
STEP I					
Phase I- Infiltration/Inflow	\$92,000	\$69,000	\$0	\$23,000*	
Phase II-SSES	464,540	348,405	0	116,135*	
STEP II					
Design	76,000	57,000	19,000	0	
STEP III					
Construction	1,305,000	978,750	271,631	54,619	
-	TOTAL:	\$1,937,540	\$1,453,155	\$290,631	\$193,754
	SHARE:		75%	15%	10%

\* Funds expended to date by City

NOTES: US = U.S. Environmental Protection Agency  
MASS = State Division of Water Pollution

SUBJECT: EDA-Economic Development Administration (Funds)

CONTACT: Paul Rupp  
Director  
Office of Planning and Community Development  
City Hall  
Revere, Massachusetts 02151

SYNOPSIS: The Economic Development Administration of the U.S. Department of Commerce operates certain public works grant programs geared to the support of business and industrial interests as they relate to the creation or maintenance of permanent jobs in primarily urban settings. Up until this time public works funding within EDA has been limited and has required a substantial local cash match (as much as 40% of the project cost). Additionally, EDA is badly understaffed and operates with cumbersome, slow, and complex administrative procedures. EDA is currently in a state of uncertainty as to the future direction, thrust and procedures of its programs, due to the fact that the agency is about to undergo a major reorganization aimed at eliminating overlaps and duplication of effort. This reorganization was mandated by Executive Order of the President and is being orchestrated by the Executive Office of Management and Budget.

In any event, rather than await the outcome of the reorganization, this department has recently completed seven "profiles" of needed public works projects in accordance with the procedures for existing EDA programs. These preliminary application forms will be submitted to the EDA representative within the next few days.

Each profile is rated in terms of its local priority. Reconstruction of the municipal storm drain system has been assigned the top priority rating.

COMMENTS: In realistic terms, unless there are major changes forthcoming in EDA's programs, chances of securing funding for reconstruction of the storm drain system, which could run in excess of \$4.5 million, are not good. Under the existing regulations it will be

COMMENTS: extremely difficult to translate the need for drain  
(continued) system reconstruction into a quantifiable breakdown  
of permanent jobs created or preserved as a direct  
result, this unfortunately, is EDA's present  
evaluation criterion. Additionally, under present  
regulations even if the City were successful in  
obtaining an EDA funding commitment we would have to  
produce a rather substantial local cash match for  
this work.

The Office of Planning and Community Development will  
continue with the application process in the hope  
that EDA reorganization will produce a more favorable  
funding climate.

SUBJECT: CDBG-Community Development Block Grant (Funds)

CONTACT: Paul Rupp  
Director  
Office of Planning and Community Development  
City Hall  
Revere, Massachusetts 02151

SYNOPSIS: The Community Development Block Grant Program administered by the U.S. Department of Housing and Urban Development (HUD) is authorized by the Housing and Community Development Acts of 1974 and 1977. Community Development Block Grants fall into three categories:

1. Entitlement or Hold-Harmless
2. Discretionary
3. Small Cities

As a community of under 50,000, Revere was eligible for the five-year phase-out "Hold-Harmless" program and received entitlement funds of: \$30,000 for federal fiscal years 1975, 1976 and 1977; \$20,000 for fiscal year 1978; and \$10,000 for fiscal year 1979. Entitlement funds can be utilized for any of the broad range of basic eligible activities contained in the Community Development Regulations.

Discretionary funds which were replaced in fiscal year 1978 by the Small Cities Program operated on a highly competitive basis. Revere received \$75,000 in fiscal year 1975; \$95,000 in fiscal year 1976; and \$250,000 in fiscal year 1978, for various programs falling within the list of basic eligible activities.

Revere was awarded in August Of 1978 a three year, \$3 million commitment in comprehensive Small Cities Community Development funds; \$1 million per year for fiscal years 1978, 1979 and 1980, while theoretically any of the basic eligible activities could have been included in the comprehensive application, the highly competitive application process and a complex ranking formula virtually dictated that a neighborhood revitalization strategy; serve as the program matrix. That is, a coordinated program of home improvements, public works activities, and neighborhood preservation projects in relatively small clearly definable neighborhoods.

SYNOPSIS: In any event, the selection process for all activities  
(continued) for which CDBG funds have been sought, whether Entitle-  
ment, Discretionary or Small Cities, has adhered  
strictly to the city's Community Development, Citizen  
Participation Plan. The anticipated availability of  
funds is widely publicized, proposals and suggestions  
for the use of these funds are solicited and encouraged,  
public hearings and informational meetings are held,  
and the Citizens Advisory Committee formulates a final  
set of application recommendations based on the afore-  
mentioned steps.

COMMENTS: Certain flood control projects would clearly fall  
within the list of basic Community Development eligible  
activities. A re-allocation of Small Cities CDBG-funds  
(the only funds currently available) would be possible  
up to a point. However any major re-allocation of  
funds would require a HUD approved amendment which may  
in fact change the comprehensive program's rating  
status and jeopardize funding. In my opinion any minor  
re-allocation which could be undertaken without HUD  
approved amendment would produce such a small amount of  
available funds that cost effective flood control work  
could not be undertaken.



**CD**

MAYOR'S OFFICE OF COMMUNITY DEVELOPMENT  
CITY OF REVERE, MA. 02151 (617) 284-3600  
GEORGE V. COLELLA, Mayor

Citizens Advisory Committee  
GRACE MYETTE Chairperson  
JOSEPH TELLO  
MARGARET HARKINS  
LILLIAN CARFIO

ROBERT J. FURLONG  
City Planner  
PAUL RUPP  
Community Development  
Director

April 24, 1979

Mr. Paul Rupp  
Revere City Hall  
Revere, Massachusetts 02151

Subject: 1975 Storm Drainage Improvements Study  
By Somerville Engineering

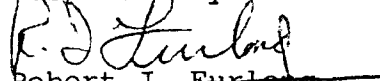
Dear Paul:

After consultation with appropriate City agencies, namely Harris Goldberg Sewer and Drain Foreman, David Calichman, Engineer and Steven Fedor, Superintendant of Public Works, the following findings have been made regarding work completed or partially completed on the attached list of twenty-six items;

- Item # 1- Completed
- Item # 6- Catch basins cleaned.
- Item # 8- Now a part of the Beachmont School Project.
- Item #16- Chlorinator installed, alarm system installed, minor general and emergency repairs.
- Item #19- Catch basin cleaned.
- Item #23- Completed.
- Item #25- Now the responsibility of the Metropolitan District Commission.

None of the other items on the attached list have been worked upon. Because of the fact that this list is several years old, it is suggested that it be reviewed by our local appropriate City departments.

Respectfully submitted,

  
Robert J. Furlong  
City Planner

cc: Mayor  
RJF/db  
Attachments



# 1975 Storm Drainage Improvements Study, Somerville Engineering

TABLE VI - Cost Estimate of Proposed Improvements

SECTION	LOCATION	LIMITS OF WORK	TYPE OF WORK & QUANTITY	COST	INCREASE 15%
1	Orvis Road	Malden Street from Orvis Road to Derby Street	New catch basin and storm drain pipe.	\$9,500	\$11,000
2	Bay Road	Sears Street to Eastern County Ditch	Paved swale - 680 lin. ft.	\$2,000	\$2,300
3	Arcadia St.	Oak Island Street to Eastern County Ditch	Clear and upgrade area, partial fill, properly graded - 45,000 sq. ft.	\$4,000	\$4,600
4	Dunn St.	Shawmut Street to southerly end of Dunn Street	18-inch drain - 1,000 lin. ft. 10 catch basins, 12"-200 lin. ft. 5 manholes, miscellaneous work (curbing)	\$28,900	\$35,200
5	John Mooney Road	Beach Street to Butler Street	Miscellaneous work, 600' side-walk reconstruction, 2 catch basin inlets (new), invert man-hole (constructed)	\$3,400	\$4,000
6	Seawall St.	Lowe Street to Elm Street	Clean 500 lin. ft. (8" drain) 7 catch basins	\$4,100	\$4,700
7	Summer St.	Crescent Avenue and Winthrop Avenue	Clean 300 lin. ft. (8" drain)	\$2,400	\$2,800
8	Fredericks Park	Bennington Street to marsh on south-easterly side	Fill (loam), grade, seed (toward marsh) - 14,000 sq. yrd.	\$15,000	\$18,000
9	Tafts St. area	At Mill Creek discharge	Pumping station, tide gate chamber, new gates	\$27,000	\$31,000

TABLE VI  
(continued)

SECTION	LOCATION	LIMITS OF WORK	TYPE OF WORK & QUANTITY	COST	INCREASE <sup>15%</sup>
10	Vane and Arnold St. area	Arnold Street to Northeast Expressway	1,600 lin. ft. of 24", 30" and 36" pipe cleaned (catch basin also), new manholes	\$11,200	\$12,400
11	Ventidido Rd. Joseph, Michael & Richie Rds. (Upper C.A.)	Sargent Street to Northeast Expressway Exit Ramp	250 lin. ft. ditch improvement (widen, deepen and clean)	\$2,500	\$3,000
12	Geneva St.	Milano Street to Geneva Street	100 lin. ft. of 12" pipes and manholes	\$3,900	\$4,500
13	Beach Rd.	Naples Road to 300 feet to the north	300 lin. ft. - Ditch reconstruction (rip rap), headwall	\$8,400	\$9,700
14	Marble St.	At intersection of Washington Avenue	3 new catch basins, curbing, pavement repairs	\$2,900	\$3,400
15	Salem St.	Salem Street to 700' east along B&M tracks	700 lin. ft., ditch improvement, 10 lin. ft. of 12" pipe	\$950	\$1,100
16	Point of Pines	At pumping station	General repairs, miscellaneous work, alarm, humidifier	\$8,600	\$10,000
17	Marshall St.	Near Northgate Shopping Center	Street re-shape and pavement	\$2,000	\$2,300
18	Library St.	At intersection with Elm Street	Curbing $\pm$ 40 lin. ft.	\$500	\$600

TABLE VI  
(continued)

SECTION	LOCATION	LIMITS OF WORK	TYPE OF WORK & QUANTITY	COST	15%	
					INCREASE	
19	Kingman Av.	Between Kingman and Carlson Avenue	+ 50 ft. of sidewalk, cleaning of catch basin and cleaning of line from Kingman to Carlson Avenue	\$2,300	\$2,700	
20	Sherman St.	Sherman Street to MDC Channel	New 18-inch drain line to MDC outfall - + 300 lin. ft.	\$6,000	\$6,900	
21	Waitt Park	At North Revere off Salem Street	Asphalt berm	\$500	\$600	
22	Washburn Av.	At Beachmont off Winthrop Avenue	Cleaning of the storm drain inlet at Washburn Avenue	\$300	\$350	
23	Beckert Av.	In the Point of Pines	Cleaning of catch basins	\$1,000	\$1,200	
24	East Mountain Av.	County Ditch	Clean and remove debris + 100 ft. along the 45" X 54" culvert	\$3,200	\$3,750	
25	Broadsound Av.	At Beachmont	Cleaning of the existing storm drainage and catch basins in the vicinity	\$4,700	\$5,500	
26	County Ditch	Central County Ditch	1. New P.S. at Diamond Crk; 2. New P.S. at American Legion Highway; 3. New 60-inch R.C. parallel to existing 60-inch MDC pipe; 4. Reconstruction and paving of County Ditch - 20 feet long X 5 feet deep.	\$108,000	\$124,000	



# *The City of REVERE, MASSACHUSETTS*

GEORGE V. COLELLA  
MAYOR

PUBLIC WORKS DEPARTMENT — CITY HALL

STEVEN A. FEDOR  
Superintendent of  
Public Works

April 26, 1979

Mayor George V. Colella  
City Hall  
Revere, MA 02151

Re: Progress Report  
Cleaning County Drain Ditches

## Eastern County

- |  |  |
|--|--|
| A. North Shore Road to Revere St. (Northerly)                                  | Completed  |
| B. Revere St. to North Shore Road (Easterly)                                   | App. 800' completed<br>200' remaining                            |
| C. North Shore Rd. to B & M Railroad (Easterly)                                | Probable starting<br>date 5/15/79                                |
| D. Refurbishing of B & M Tidegate  | Pending transfer FDAA<br>Funds--probable starting<br>date 6/1/79 |
| E. Installation of 2 Guillotine Gates<br>Located at Revere St. & No. Shore Rd. | Designed, stock ordered<br>Starting date 5/15/79                 |

## CENTRAL COUNTY

- |  |                  |                                  |
|--|------------------|----------------------------------|
| A. Cleaning of concrete culvert on<br>American Legion Hwy. | Mosquito Control | Probable starting date<br>5/1/79 |
| B. Removal of debris lower end of Atwood St.               |                  | Completed                        |

## SALES CREEK

- |  |  |
|--|--|
| A. Cleaning of County Drain Ditch along B & M<br>Right-of-Way      | Pending FDAA Funds transfer<br>Probable starting date<br>6/20/79 |
| B. Dredging of Eastern section of Sales Creek (Behind Cerretani's) | Pending FDAA Funds transfer<br>Probable starting date<br>6/20/79 |

Mayor

4/26/79

Progress Report--County Drain Ditches

C. Cleaning of outlet, southern section Suffolk Downs Outlet.  
Completed 4/12/79

D. Removal of debris Harris St. Connection  
(Pending FDAA Funds transfer) Probable starting  
date (6/20/79)

CATCH BASIN CLEANING

A. Point of Pines	Ward 5	Basins completed
B. Oak Island	Ward 5	Basins completed
C. Beachmont	Ward 1	Basins completed
D. Reservoir Ave. Hills	Ward 4	
E. Proctor Ave. Hills	Ward 4-6	
F. Shirley Ave. Hills	Ward 2	Equipment being
G. Trevalley Hills	Ward 5	repaired 4/23/79
H. Malden St. area	Ward 3-6	to 5/3/79
I. Trevalley Flats	Ward 1	
J. North Revere	Ward 6	

Progress map located at City Yard.

SEWER CLEANING

A. Coordinated with Haydn, Harding & Buchanan--ongoing  
recommendations as sewerage study progresses.

B. Point of Pines Pumping Station to Revere Street (FDAA  
Contract commencing April 9, 1979) Completed 4/26/79  
5 Manholes to be raised 5/20/79

C. Priority areas as determined by Sewer Department

Washington Street	Atwood Street	Floyd Street
Bates Street	Hawes Street	Jones Road
Douglas Street	Revere Street	Bryant St.
Fairfield St.	Shurtleff St.	Henry St.
	George Ave.	

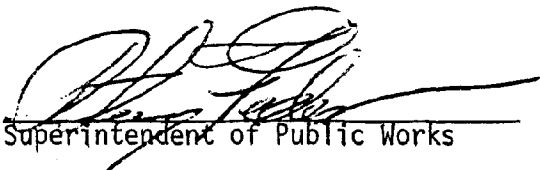
DRAIN CLEANING (High Velocity Machine) Equipment being repaired 4/23/79 to  
5/3/79

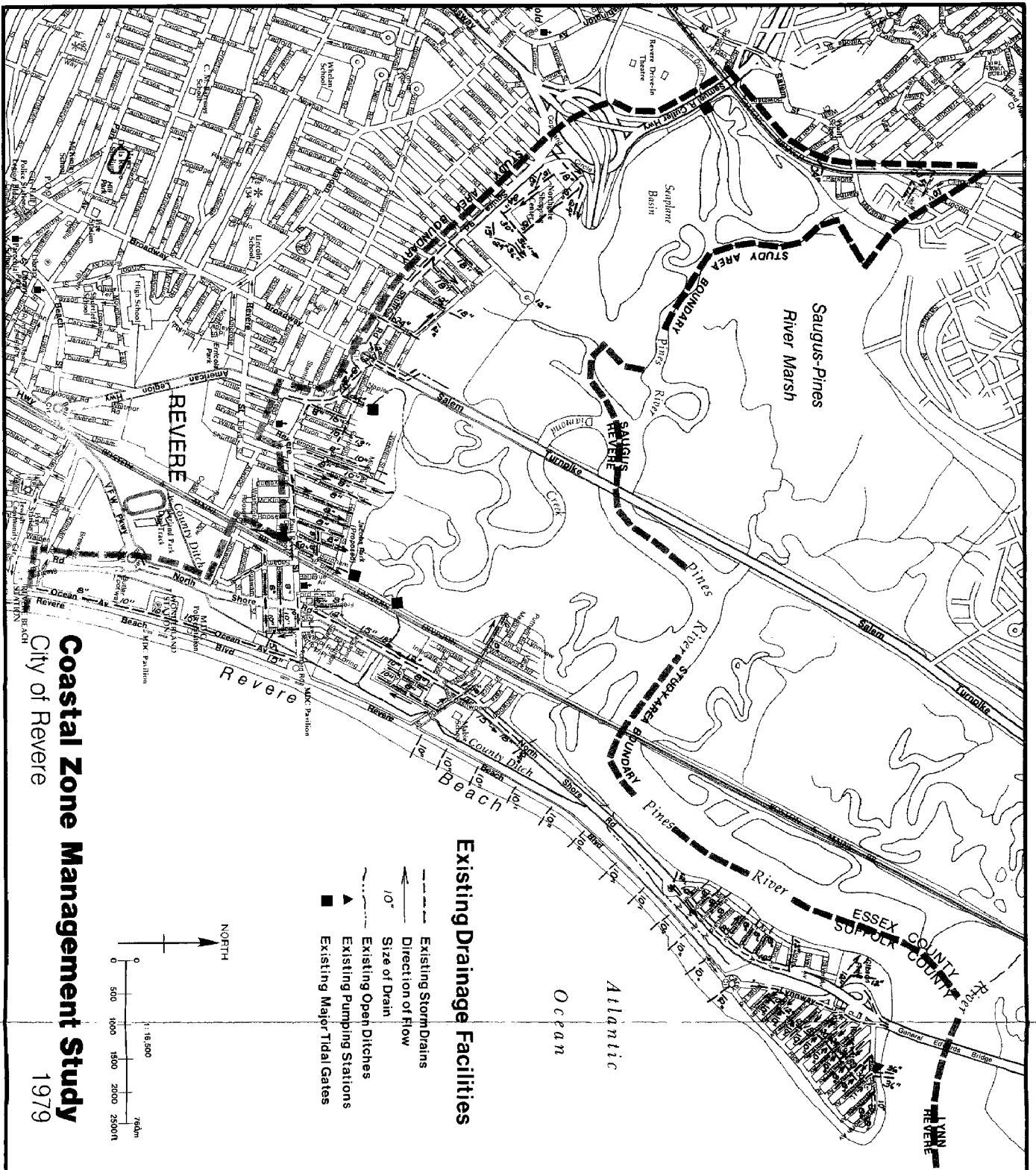
Priority areas as determined by Sewer Department Foreman

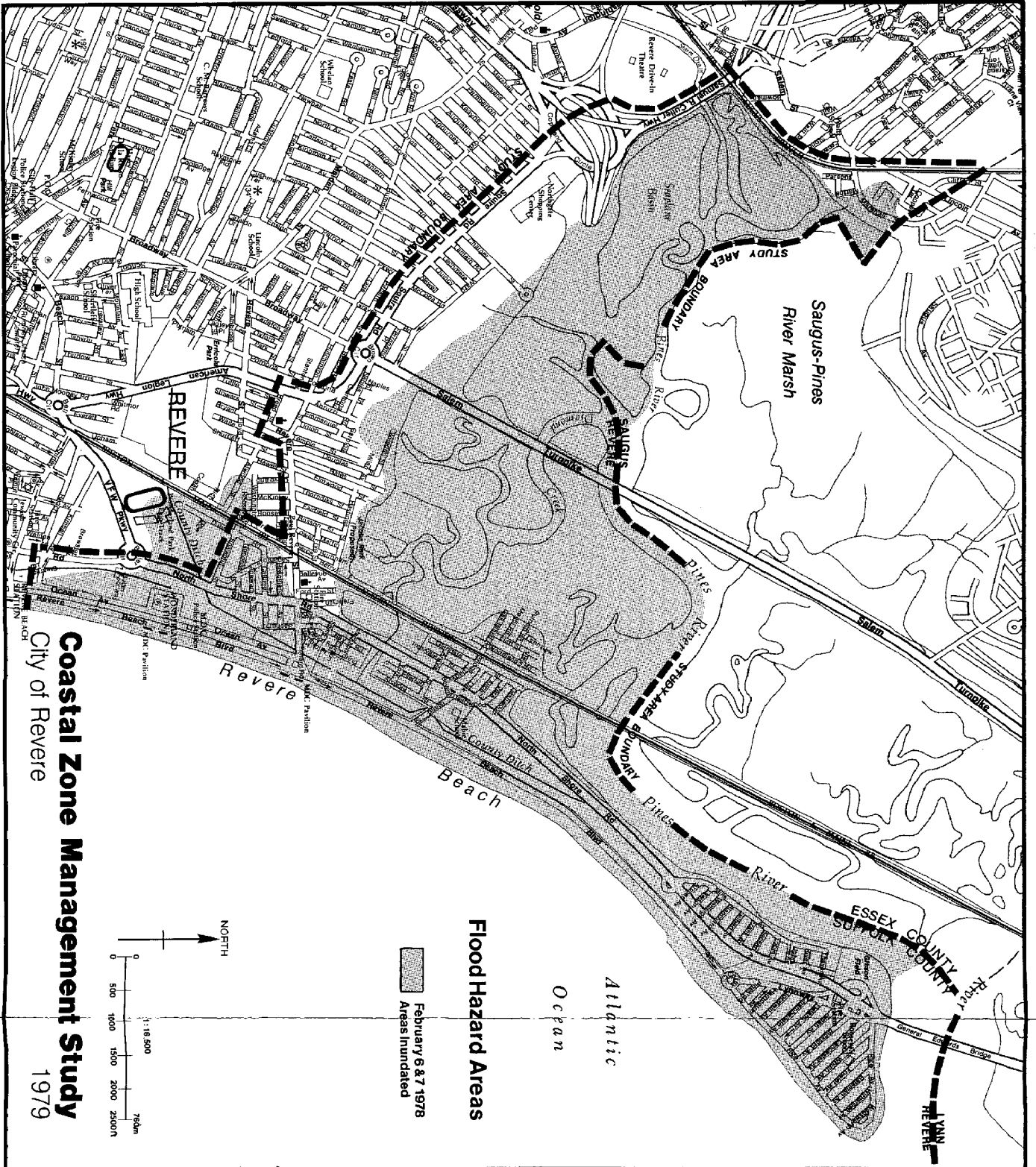
Very truly yours,

SAF:el

-192-

  
Superintendent of Public Works





Modifications to the Eastern County Ditch



Marcus Hann  
Richard C. Downes, P.E.  
Consulting Engineers  
46 Parmenter Road  
Waltham, Mass. 02154

May 14, 1979

Mr. Terrence Geoghegan  
Project Director  
Coastal Zone Management Study  
City of Revere  
City Hall  
281 Broadway  
Revere, Massachusetts 02151

Subject: Modifications  
to Eastern County Ditch  
Revere, Massachusetts.

Dear Mr. Geoghegan:

We are pleased to submit the attached report "MODIFICATIONS TO EASTERN COUNTY DITCH, REVERE, MASSACHUSETTS." This report has been prepared as a feasibility study, to determine the most efficient method of curtailing the frequent flooding of the study area.

The report was prepared on the basis of the evaluation of two major reports previously written on the study area, on site surveys and independent storm hydrologic computations.

All studies and evaluations considered in the preparation of this report were based on storm water runoff only. Ocean wave overtopping was not considered as tributary to this site as this phase of flood control was or will be under study and design by others.

We would like to acknowledge your valuable assistance throughout this project, and the assistance of Mr. Henry Higgot of the Metropolitan District Commission.

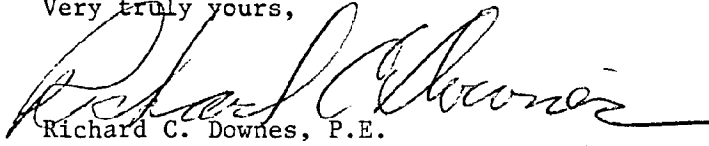
(continued)

Page Two  
Mr. Terrence Geoghegan

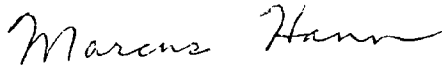
May 14, 1979

We believe that this report fullfills our obligation under our contract with the City of Revere dated March 30th, 1979, and we will be pleased to provide any additional assistance that may be required.

Very truly yours,



Richard C. Downes, P.E.



Marcus Hann

## CONTENTS

SCOPE .....	I
HISTORICAL DESCRIPTION .....	III
OUTLINE OF REPORT .....	IV
RECOMMENDATIONS IN BRIEF .....	IV
REPORT	
Section I - Hydraulic Design and Investigation ....	V
Section II - Recommendations .....	XIII
Section III - Preliminary Estimates of Costs .....	XVIII
APPENDIX	
A - Photographs .....	XX

### SCOPE

The purpose of this study is to present viable alternative solutions to the severe flooding problem which effects the tributary area of the Eastern County Ditch, and to provide preliminary cost estimates for these solutions.

Water entering the drainage area by means of wave overtopping of the seawall along Revere Beach has not been included in this study. The Metropolitan District Commission has contracted with the engineering firm of Fay, Spofford and Thorndike to design a "flood control system" which will eliminate the wave overtopping that frequently inundates this study area.

The effects of future developments within the drainage area were studied. These projects included the Revere Beach Development Project, Parch H, the Revere Beach Reservation and North Shore Transit Improvement Project.

The effects of future developments outside of the drainage area which might cause additional water to enter the study area were not considered. Only rainfall runoff entering the Eastern County Ditch through the present storm drainage systems, or as altered by the above proposed project, are considered in the design calculations.

Extensive use was made of the following two documents:

1. Storm Drainage Improvements for the City of Revere, prepared by Somerville Engineering, Inc., Somerville, Massachusetts.
2. Environmental Impact Report-Revere Beach Development Project, prepared for the Metropolitan District Commission by Camp, Dresser & McKee, Inc., Boston, Massachusetts.

These reports were given as acceptable material to be used and expanded upon in preparing the study data for this report.

### Description Of Work To Be Performed

The work for this project was divided into the following tasks:

- TASK 1 - Review Available Literature on the drainage area. Two major reports had previously been prepared on this area, and these reports were reviewed in detail.
- TASK 2 - Field Trips to the area. Two field trips were taken to the area, and photographs were taken. These photographs are included in Appendix A of the report.
- TASK 3 - Data Collection. Additional data was collected on the drainage area. This data includes rainfall information from the U.S. Weather Bureau for years not covered in the available literature; additional tidal information for the two major storms of 1978 and 1979; information on the proposed developments in the area; and a topographic (photogrammetric) map of Revere Beach made by Col. East, Inc., for Metcalf & Eddy, Inc.
- TASK 4 - Calculation of stormwater runoff, and selection of the design runoff flow. Due to the large quantity of water estimated to occur during a major storm, a hydrograph was prepared to determine the peak runoff.
- TASK 5 - Check capacities of the existing ditch and culverts.
- TASK 6 - Consider and study all methods that can be envisioned as viable alternatives to alleviating or reducing the flooding within the study area.
- TASK 7 - Develop preliminary cost estimates for the recommendations.
- TASK 8 - Present a final recommendation and prepare the final report.

### HISTORICAL DESCRIPTION

The Eastern County Ditch is located in Revere, Massachusetts, in close proximity to the Atlantic Ocean and Revere Beach. The ditch is shown in its entirety on Plate A, included at the end of this section of the report.

The drainage area for the Eastern County Ditch is bounded on the East by the seawall along the Atlantic Ocean, on the West by the Boston and Maine Eastern Division Railroad tracks, on the North by Oak Island Street, and on the South by Shirley Avenue.

The Eastern County Ditch was originally connected to the Central County Ditch. In earlier construction efforts the Central County Ditch was diverted West of the B & M Railroad tracks. The Eastern County Ditch now has its origin, which is supplied by underground conduits from the Wonderland Dog Track parking lot and Shirley and Beach Street drains, at the South-Westerly corner of the Wonderland Dog Track parking lot, and terminates at the tide gate under the B & M Railroad tracks, which in turn discharges into Diamond Creek.

The Eastern County Ditch is presently an open, unlined ditch, incorporating four underground culverts. These culverts are identified as the Shawmut Street culvert, Revere Street culvert, Rt. 1A culvert, and the B & M culvert, all shown and identified on Plate A at the end of this section.

The tributary area for the Eastern County Ditch has received two major storms in the last two years, these being the Great Blizzard of 1978 and the storm on January 25, 1979. Both of these storms resulted in record rainfalls for this area, and both storms practically flooded the entire drainage area. Residents in the area have continually complained about flooding problems even during moderate rainfall. With the prospect of major new construction projects in this area, including highways, mass transit, parks and housing developments, it becomes imperative that some remedial action be taken to relieve the flooding problem.

## OUTLINE OF REPORT

This report is divided into three sections.

Section I - Hydraulic Design and Investigation, summarizes the hydraulic calculations prepared for this report.

Section II - Recommendations, examines all data given, obtained and calculated, and presents the concluded recommendations that we believe meet the written and expressed requirements of this report.

Section III - Preliminary Estimation of Costs, describes the many variables included in the estimating procedure together with a preliminary estimate of costs.

## RECOMMENDATIONS IN BRIEF

An evaluation of the existing drainage system, i.e. The Eastern County Ditch including the several culverts, revealed the necessity for a revised cross section throughout the entire open ditch; the replacement of the Shawmut Street culvert; adding additional culverts at Route 1A and under the B & M Railroad tracks; and constructing a large holding basin and a pumping station to discharge the runoff waters to Diamond Creek on the northwest side at the B & M Railroad tracks.

## Section I: HYDRAULIC DESIGN AND INVESTIGATION

INTRODUCTION: Hydraulic structures are usually classified into two categories, major or minor hydraulic structures. Minor types of hydraulic structures include small crossroad culverts, levees, drainage ditches, urban storm-drain systems, airport drainage structures, and spillway appurtenances of small dams. Major hydraulic structures involve the design of large dams and problems associated with flood control techniques for large rivers. The Eastern County Ditch in the City of Revere, therefore comes under the category of minor hydraulic structures used for the transportation of urban runoff.

Accurate prediction of peak discharge for a design frequency is extremely important for the proper functioning of a drainage system. Various techniques for the estimation of peak discharge area are available. These techniques are given in Table I-1 below.

Table I-1, Peak Discharge Estimation Techniques

Drainage Area, sq. miles	Techniques Used
Less than 5	Rational Method, Overland Flow Hydrograph
5 - 100	Unit Hydrograph; Flood Frequencies
100 - 2000	Unit Hydrograph; Flood Routing
Over 2000	Flood Routing

Since the watershed area for the Eastern County Ditch is well under 5 square miles, it was considered reasonable to use the Rational Method for the estimation of peak runoffs. The Overland Flow Hydrograph method was also used principally for the purpose of determining pumping needs.



### Estimation of Storm Runoff

Storm runoff estimates are based on the so-called rational equation:

$$Q = CIA$$

Where:

Q = peak runoff or discharge in cubic feet per second (cfs)

C = runoff coefficient depending upon the characteristics of the drainage area. It varies between 0.0 and 1.0

I = average rainfall intensity in inches per hour for a duration equal to or greater than the time of concentration (tc)

A = drainage area in acres

The design frequency generally encountered in minor structure design varies according to the type of minor structure. For storm drainage systems, the acceptable range is 2-10 years whereas for drainage ditches, 5 to 50 years frequency storms are considered. In this report 10-year frequency was selected for the estimation of peak runoff. However, the adequacy of a reshaped Eastern County Ditch to carry a 25-year storm was also checked.

Rainfall intensity values were selected from Figure A which is based on the U.S. Weather Report - Technical Paper 40. This figure was developed by Somerville Engineering and is contained in their report titled "Stormwater Improvements for the City of Revere" submitted in 1975.

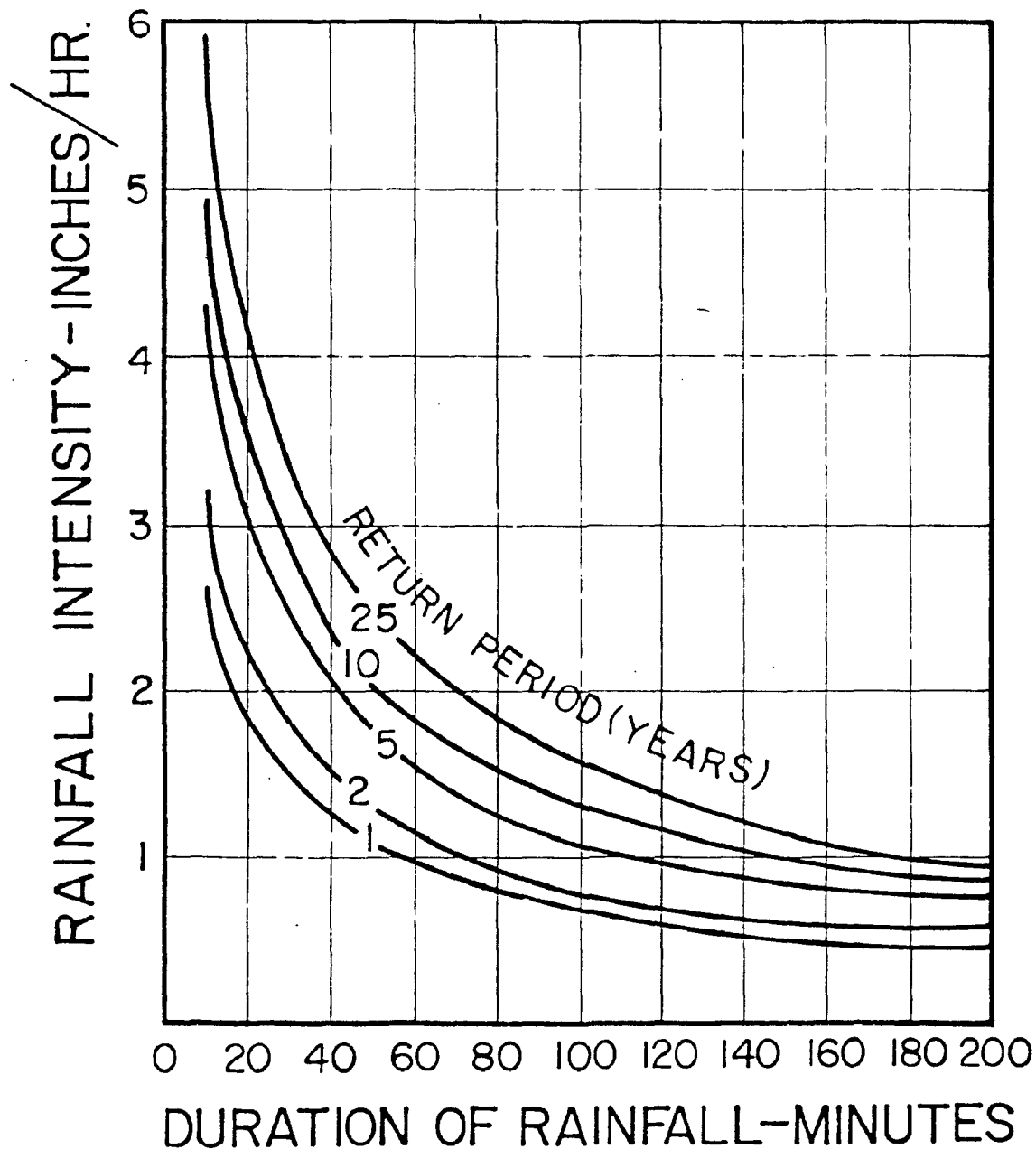


FIGURE A RAINFALL INTENSITY CURVES FOR  
1, 2, 5, 10 and 25 YEAR STORM  
FOR REVERE

### Flow Determination

The Eastern County Ditch drainage area was subdivided into five sub-drainage areas for the purpose of determining the total peak runoff. Individual peak runoffs from these five drainage areas and total peak runoff are shown on Table I-2. Drainage area 2 represents the Revere Beach Development Project and consists of Southern Drainage Section and Northern Drainage Section. In Table I-2, C values are weighted values for the sub-drainage area.

From the previous table it can be seen that the total peak runoff from a 10-year storm for the entire drainage area is about 545 cubic feet per second. However, by following the same methods i.e., the Rational Formula for a 25 year storm, the total peak runoff is calculated as 756 cubic feet per second or about 488 million gallons per day. Comparison of 10-year and 25-year frequency flows is presented in Table I-3. Storm runoff from a 25-year storm is important for sizing any pumping station if it were needed.

Table I-2: Peak Flow Determinations (10-year frequency)

Drainage Area Number	Location of Q	A Acres	C	I inches/hr & tc minutes	Total Q Peak (cfs)
1.	Shawmut Street - At the entrance to culvert size 36" X 58"	91	0.70	3 , 20 minutes	191
2.	Project Area				
	North	22.9	0.95	3 , 21	81
	South	13.5	0.92	3 , 16	51
					= 132
3.	Revere Street - At the entrance to culvert size 6' X 9'	34.4	0.80	3.9, 15	107.33+132 + 191 = 430.3

Table I-2: Peak Flow Determinations (10-year frequency)  
(continued)

Drainage Area Number	Location of Q	A Acres	C	I inches/hr & tc minutes	Total Q Peak (cfs)
4.	Route 1-A - At the entrance to culvert size 5' X 5'	41.3	0.60	3, 20	74.34+430.3 = 504.6
5.	B & M Railroad - At the entrance to culvert 5'6" X 6'	33.3	0.43	2.8, 30	40.1+504.6 = 544.7

Table I-3: Comparison of 10-yr. & 25-yr. Storms

Inlet Point	10-yr. Storm Flow cfs	25-yr. Storm Flow cfs
1. Shawmut Street culvert size 36" X 58"	191	274
2. Revere Street culvert size 6' X 9'	430	599
3. Route 1-A culvert size 5' X 5'	505	707
4. B & M Railroad culvert size 5'6" X 6'	545	756

### Adequacy of Existing Ditch & Culverts

The flow carrying capacity of existing ditch and culverts was checked by using the Manning's Equation and Nomographs for highway culverts.

#### A. Existing Ditch

Since the existing ditch is of irregular shape and size, it was considered reasonable to assume an average size for the determination of flow capacity. It was assumed that the ditch was an average width of 8' and an average depth of 4'.

Manning's Formula for flow determination is represented by the equation:

$$Q = A \times \frac{1.486}{n} R^{2/3} S^{1/2}$$

Where:

Q = Flow in cubic feet per second (cfs)  
A = Area of flow in square feet  
n = Manning's Coefficient of friction  
R = Hydraulic Radius  
S = Bed Slope of channel

By applying the above formula, it was determined that the channel has a carrying capacity of 120 c.f.s. which is much less than the 10-year flow of 191 c.f.s. at the entrance to the Shawmut Street Culvert.

From the above calculation, it can be concluded that the present channel, even in its first reach, is incapable of carrying a 10-year storm. The present channel would, therefore, have to be improved by lining the channel and/or providing a steeper slope. Recommendations to improve the existing ditch are discussed later in this report.

#### B. Existing Culverts

There are four culverted entrances along the route of the Eastern County Ditch. Each entrance was checked for its capacity to pass the desired flow without being

surcharged. The results of this analysis are summarized below:

1. Culvert at Shawmut Street, Size 36" X 58"

This culvert is a corrugated metal pipe of elliptical shape. By using the nomographs for highway culverts, it was determined that this culvert has a capacity of only about 80 c.f.s. against the 10-year peak flow of 191 c.f.s.

Therefore, this culvert is inadequate to handle present storm conditions.

2. Revere Street Culvert, Size 6' X 9'

This culvert is a concrete box culvert of rectangular shape. By applying the Manning's Equation, it was determined that this culvert is sufficiently adequate to pass a 10-year storm flow and even a 25-year storm with only a minor surcharge condition. The culvert has a capacity of 540 c.f.s. against 10-year storm flow of 430 c.f.s. and 25-year storm of 599 c.f.s.

3. Route 1-A Culvert, Size 5' X 5'

This culvert is also a concrete box culvert of square shape. This culvert is of inadequate capacity. It can pass only a flow of 235 c.f.s. against the expected 10-year flow of 504 c.f.s. and 25-year storm flow of 707 c.f.s. Therefore, this culvert is also undersized and inadequate.

4. Boston and Maine Railroad Culvert, Size 5'-6' X 6'-0'

This is a concrete box type culvert which does not have adequate capacity to pass either a 10-year storm or a 25-year storm. This causes the surrounding areas to get submerged during heavy storms.

Recommendations to improve the above culverts are discussed in detail in later chapter of this report.

Pumping & Storage Requirements

During the peak flow periods coupled with a simultaneous high tide, the function of the tide gate is severely handicapped. This condition results in flooding upstream of the drainage ditch. To overcome this barrier to gravity flow, it is necessary to

provide a pumping station whereby the storm runoff can be pumped out into Diamond Creek. To design a pumping station having capacity equal to the peak flow would require pumping machinery of enormous size with unusually high capital as well as operation and maintenance costs. To evenly distribute the peak flow over a reasonable period of time, storage lagoons would be required.

An Overland Flow or Direct Runoff Hydrograph for a 25-year storm was prepared. This graph was utilized to determine the pumping rate and storage capacities of the recommended system.

## Section II: RECOMMENDATIONS

Early in the study, it was concluded that there was not going to be an easy or inexpensive method to alleviate flooding. In fact there is virtually no way with any reasonableness of economy that flooding can be eliminated.

The degree of efficiency that can be attained by the prevention of wave overtopping of the sea wall will have the greatest impact on the study area in terms of Flood Control.

However, considering a very effective wave prevention program by others, flooding will still occur with profound frequency within the drainage system that exists today.

To achieve some degree of flood prevention and system efficiency a level of compromise must be undertaken. Comprised in this study is time versus cost. First it must be understood that somewhere along the line of the graph of storm re-occurrences, the surrounding areas will be flooded to a level that will overflow into the study area. Although an exact fix of this re-occurring period is not reliably predictable, the flood level is, thus this becomes the upper limit of this report. With sufficient pumps and completely adequate surface drain systems it is physically if not economically feasible to keep the study area drained for storms below this flood level.

On the other hand, the lower limit of control is essentially the system (as designed) that exists today. That is a gravity surface drain system and discharge through tide gates.

In order to relate between these two extremes it would require an exhaustive and lengthy study of flood re-occurrences and hydraulic modeling. For the purposes of this report, a storm with a 10-year re-occurrence and intensity was selected on the basis that state and federal agencies usually require that open forms of drains control meet the 10-year storm as minimum requirements.

Pumping facilities were designed on a 25-year storm value. This selection was made based on the fact that the study area has had a history of storm re-occurrences greater than that normally predicted. Also the pump rates derived for a twenty-five year storm from the hydrograph sets the rate at nearly the maximum of a ten year storm. This degree of efficiency will afford the previously effected areas a much needed flood relief program.



Based on the previous criteria, the following recommendations form what we believe is a realistic compromise between controlled flooding and positive drainage up to the point to inundation by surrounding flooded areas.

- A. Drainage Ditches
- B. Culverts and Tide Gates
- C. Pumping Facility
- D. Holding Basin Storage Facility

#### A. DRAINAGE DITCHES

##### Alternative No. 1 - An Open, Paved Ditch

A larger ditch, with a trapezoidal cross section, possibly having a uniform bed slope, and lined side and bottom will greatly increase the flow carrying capacity of this ditch. All of these factors will increase the velocity by which water will be removed from a given area. A typical cross section of the proposed ditch is given on Figure No. 1 at the end of this section. The size of the ditch will increase as it proceeds downstream. Fencing should be provided on both sides of the ditch to prevent debris from entering the ditch.

##### Alternative No. 2 - A Covered Ditch

A covered ditch, increasing in size as it proceeds downstream, is shown on Figure No. 2 at the end of this section. This is actually a reinforced concrete culvert, with open grating sections located along the entire length of the ditch. The advantage of this alternate is that the flow of water will not be obstructured by debris which will inevitably enter the open ditch. It is possible that the open grating areas will be clogged at all times by debris or ice, but in all probability city employees and/or local residents will clear these area if flooding starts to occur.

## B. CULVERTS AND TIDE GATES

There are four existing culverts located along the Eastern County Ditch. For identification purposes, they have been labeled the Shawmut Street Culvert, Revere Street Culvert; Route 1A Culvert and the B & M Railroad Culvert. These culverts are shown on Plate A.

### The Shawmut Street Culvert

Recommendation: Replace Corrugated Metal Arch Pipe with 4' X 8' Box Culvert

The existing corrugated metal arch pipe should be removed and replaced with a 4' X-8' box culvert. This new culvert is shown in Figure 3. Catch basins can easily be installed above this culvert.

The new culvert can follow the same route as the existing culvert, or it can follow the alternate route shown on Plate A. The alternate route will cost approximately the same amount of money, but will afford greater access and ease of construction.

### The Route 1-A Culvert

Recommendation: Construct a New Culvert Adjacent to Existing Culvert

A new culvert will have to be constructed under Route 1-A. A six foot diameter reinforced concrete pipe running adjacent to the existing culvert is recommended.

### The B & M Railroad Culvert

Recommendations for this culvert, are divided into three steps.

Step 1 - Provide a new six foot diameter concrete pipe culvert, with trash rack and tide gate, adjacent to the existing culvert. This will increase the capacity of the culvert, and will allow approximately twice as much water to discharge into Diamond Creek during low tide. By doing this it reduces the load on the pumping station.

Step 2 - Construct a pumping station adjacent to the ditch that will pump water into Diamond Creek during periods when the tide gates are closed.

Step 3 - Construct a holding basin adjacent to the pumping station to handle overflow from the pumping station during major storms.

A detailed explanation of the pumping station and holding basin follows:

#### Pumping Facility

The pumping station, shall be sized to house four 60,000 gallons per minute (gpm) verticle pumps, each equiped with a top mounted 450 horse power motor, an auxillary standby deisel generator with an output of 2,000 kilowatts of power, and all necessary switch gear, level controls and monitoring equipment. In addition to the operating equipment the station should contain a 20 ton bridge crane for routine maintenance. Motor and Pump removal shall be by mobile crane operating through roof hatches located over each pump.

The critical elevations of the station are as follows:

- |                                       |               |
|---------------------------------------|---------------|
| a. Main operating floor               | elev. + 14.00 |
| (100 year flood elev. equals + 13.0+) |               |
| b. Outlet to Holding Basin            | elev. + 1.00  |
| c. Centerline Pump Discharge          | elev. - 6.00  |
| d. Return from Holding Basin          | elev. - 10.00 |
| (varies w/depth of basin design)      |               |
| e. Bottom of Pump Bell                | elev. - 16.00 |
| f. Bottom of Wet Well                 | elev. - 22.00 |

#### The Holding Basin

During major storms, it will be more economical to construct a holding basin than to try to pump the peak storm runoff. After the fourth pump has been activated in the pumping station, an overflow discharge will be utilized if the water level in the pumping station continues to rise. The water will overflow into a holding basin until the peak runoff flow has subsided.

When the water level in the pumping station drops down to a predetermined level, a valve will open, allowing the water in the holding basin to re-enter the pumping station and be pumped into Diamond Creek.

The holding basin has been sized to be 300 feet by 600 feet by 3 feet deep. It will utilize a plastic liner to prevent ground water from entering the basin.

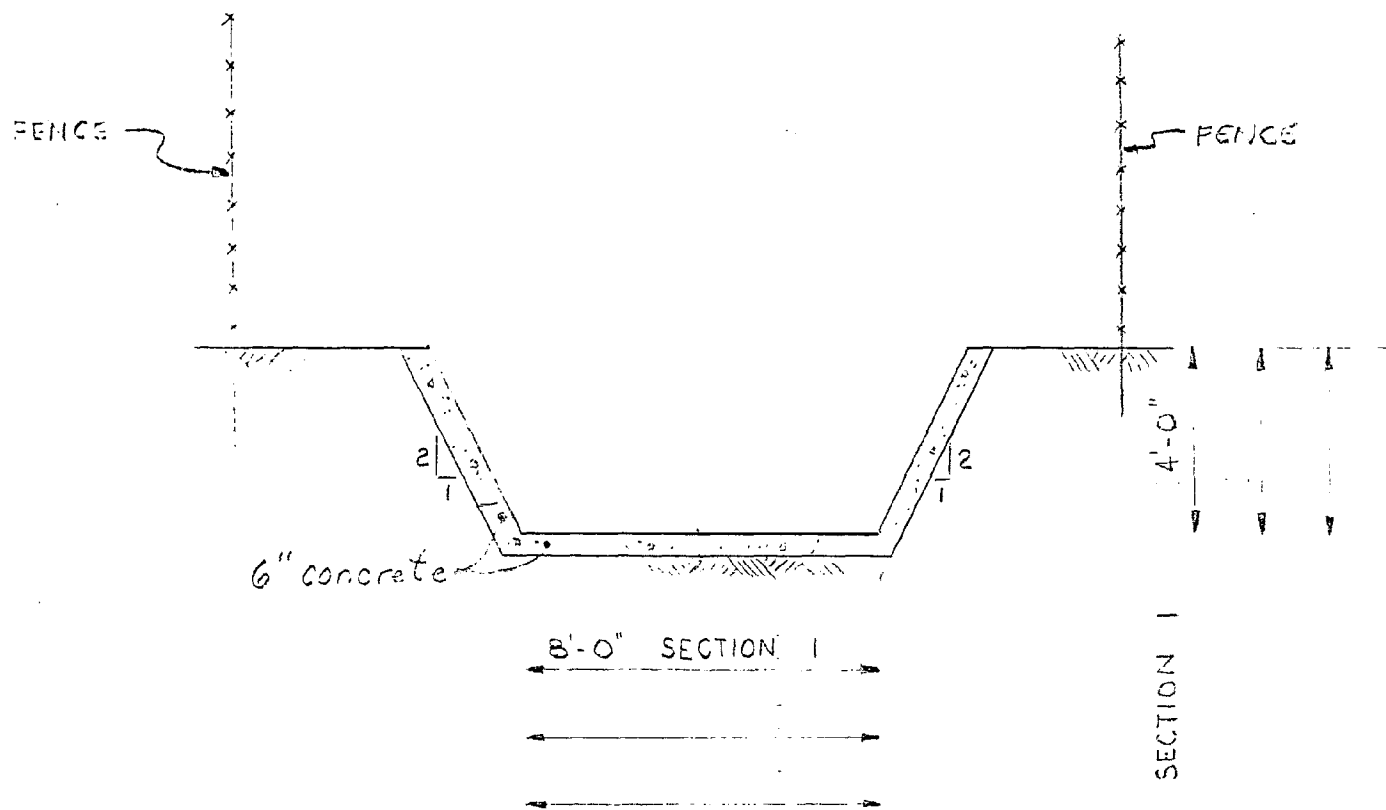


FIGURE 1

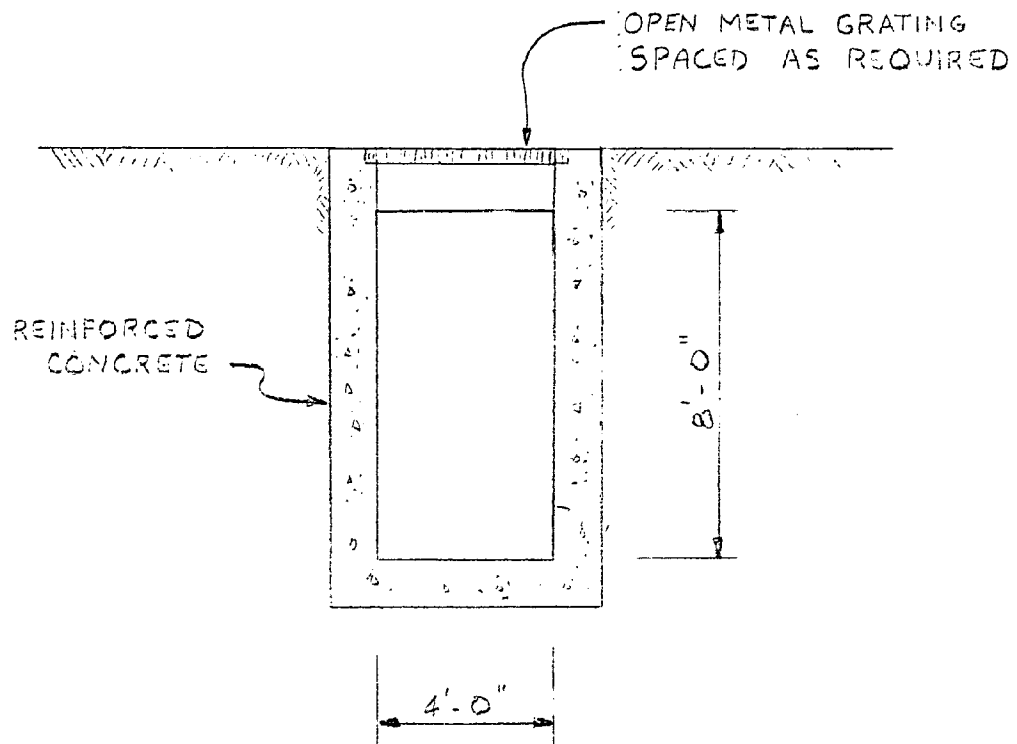


FIGURE 2

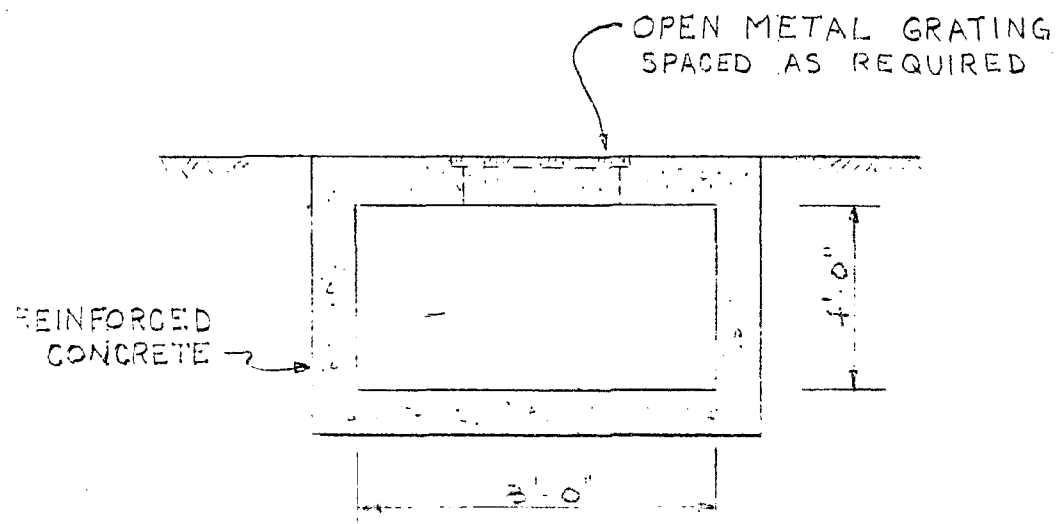


FIGURE 3

### Section III - PRELIMINARY COST ESTIMATES

The estimate is based on 1979½ dollars. The material costs represent material manufactured, fabricated, transported, and delivered to the job site. Costs for labor are the direct man-hours required to install and complete final work. Costs for labor include all wage rates (union), benefits, payroll taxes and contractor's labor fees, and profit. Indirect costs are all indirect overhead costs incurred including site and home office costs, temporary construction buildings, indirect labor and profit expendable supplies, insurances and bonds, vehicles, construction equipment operating costs, etc. The contingency represents changing material and labor markets, weather, site conditions, uncertainties in underground obstructions, limited engineering definition, etc., but not major changes in scope. For this estimate a contingency of 10% is used.

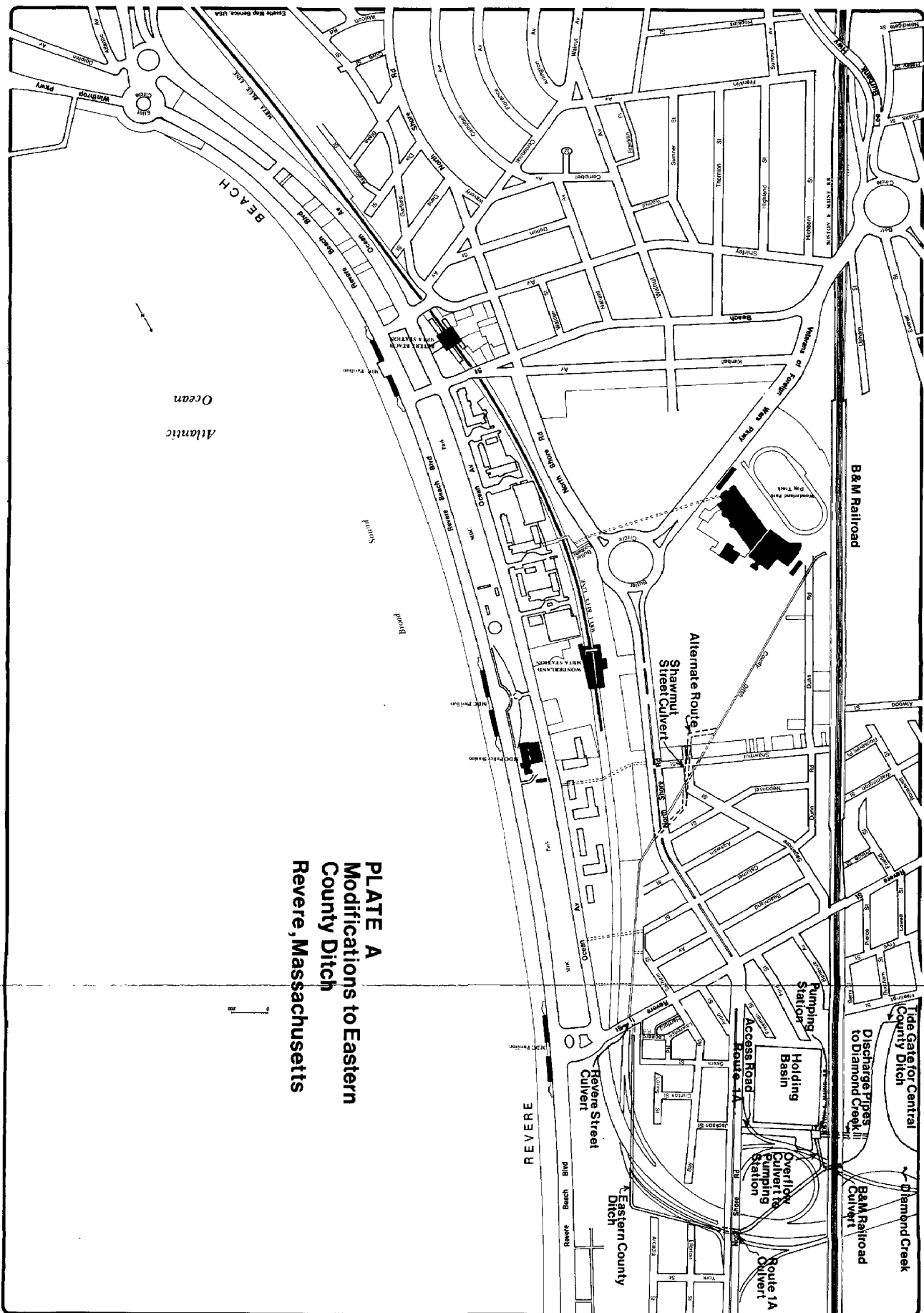
If a buried box culvert is used in place of an open pre-cast channel for the Eastern County Ditch, \$1,219,000 (which includes a 10% contingency) should be added to the base estimate. Engineering and City Supervision costs are not included, however, a total of seven percent (7%) could be used for these items. No cost for land acquisition has been included in the above prices.



Table III-1 Preliminary Cost Estimates

Estimate (X \$1,000)

	<u>Material</u>	<u>Labor</u>	<u>Indirect</u>	<u>Total</u>
1.0 Pumping Station	\$1,455.8	\$ 629.3	\$314.6	\$2,399.7
1.1 Access Road	1.8	51.8	21.6	85.2
2.0 Discharge Pipes to Diamond Creek	252.5	199.0	89.5	541.0
3.0 Holding Basin	93.6	179.7	71.9	345.2
4.0 B & M Culvert	13.8	9.8	4.2	27.8
5.0 Route 1A Culvert	16.8	58.0	25.0	99.8
6.0 Shawmut St. Culvert	78.4	188.0	80.8	347.2
7.0 Open Culvert	325.1	404.5	175.0	904.6
Sub-Total Contingency	\$2,237.8	\$1,703.1	\$782.6	\$4,750.5 475.0
Total				\$5,225.5
* For Box Culvert Add (incl. cont.)	154	732.0	333.0	1,219.0
B.C. New Total				\$6,444.5



**PLATE A**  
**Modifications to Eastern**  
**County Ditch**  
**Revere, Massachusetts**

## APPENDIX A

### Photographs

The following photographs were taken during two field trips to the site. The first trip occurred during high tide and a light rainfall. The second trip was purposely made during low tide to obtain better photographs of the tide gate structures.

No. 1

No. 2

Beginning of Ditch

Looking Downstream at Beginning  
of Ditch

No. 3

No. 4

Bridge with low clearance

Looking Downstream at Entrance to  
Shawmut Street Culvert

No. 5

No. 6

Entrance to Shawmut Street  
Culvert

No. 7

Looking South from Sagamore Street  
over Shawmut Street Culvert

No. 8

Looking North from Sagamore  
Street Towards Route 1-A

Shawmut St. Culvert starting under  
Route 1-A

No. 9

No. 10

Discharge from Shawmut Street  
Culvert

Looking Downstream From Shawmut  
Street Culvert

No. 11

Confluence with MBTA Parking  
Lot Ditch

No. 12

No. 13

Looking Upstream from Revere St.  
Bridge

No. 14

Looking Downstream from Revere St.  
Bridge

No. 15

Entrance to Revere Street  
Culvert

Discharge from Revere Street  
Culvert

No. 16

No. 17

Looking South at Point where  
Ditch turns to Route 1-A

No. 18

Looking Upstream from Route 1-A  
Bridge

No. 19

Looking Downstream at Route 1-A  
Trashrack

Looking Downstream at Route 1-A  
Trashrack



No. 20

No. 21

Close-up of Route 1-A Trashrack

Route 1-A Tidegate

No. 22

No. 23

Route 1-A Tidegate

Trashrack at B&M Railroad

No. 24

No. 25

Trashrack at B&M Railroad

Tidegate at B&M Railroad (High-  
Tide)

No. 26

No. 27

Tidegate at B&M Railroad (Low Tide)

Close-Up Tidegate at B&M  
Railroad

Revere Beach Reservation Master Plan  
Data on Drainage and Flooding

April 23, 1979

Revere Beach Reservation Park Development Project  
Master Plan Final Report  
Data on Drainage and Flooding

Design Parameters

Design Storm:	15 year return frequency
Rainfall Intensity:	From Intensity-Duration Rainfall Curves for Boston, Mass.
Runoff Coefficient:	Existing - Almost the entire drainage area is paved: $C = 0.95$  Future - Park (including Ocean Avenue) 65% impervious; Alba Development 79% impervious - Composite: $C = 0.73$
Time of Concentration:	20 Minutes (for 15-yr. storm, $i = 4$ in/hr.)
Total Area Drained:	28 acres (from Beach St. to Revere St.)  2.65 acres (between Revere St. and Oak Island St.)
Design Flows:	Pipe from Ocean Ave. to County Ditch Peak $Q = 82$ cfs  Pipe from R.B.B. to County Ditch through Sullivan Park Peak $Q = 9.5$ cfs

Drainage

In the Master Plan Final Report, it is recommended that new drainage systems should be installed in Ocean Avenue and Revere Beach Boulevard. Because of the possibility of wave overtopping continuing for some time after Boulevard improvements, there should be no connection between the new Boulevard drains and Ocean Avenue drains between Beach Street and Revere Street. New drains in the Boulevard between Revere Street and Oak Island Street should outlet to County Ditch through Sullivan Park (See Fig. 5). New drains in the Boulevard between Revere Street and the Beach Street area should outlet to the ocean by being piped, under pressure, under the beach (See Fig. 4). New drains in the Boulevard south of Beach Street should connect to Ocean Avenue drains which outlet to Sales Creek (See Fig. 6). New drains in Ocean Avenue from Beach Street to Revere Street should outlet to County Ditch. The plan as presented in the Master Plan Report (Fig. 4) is schematic only. That is, the location and number of outlet pipes

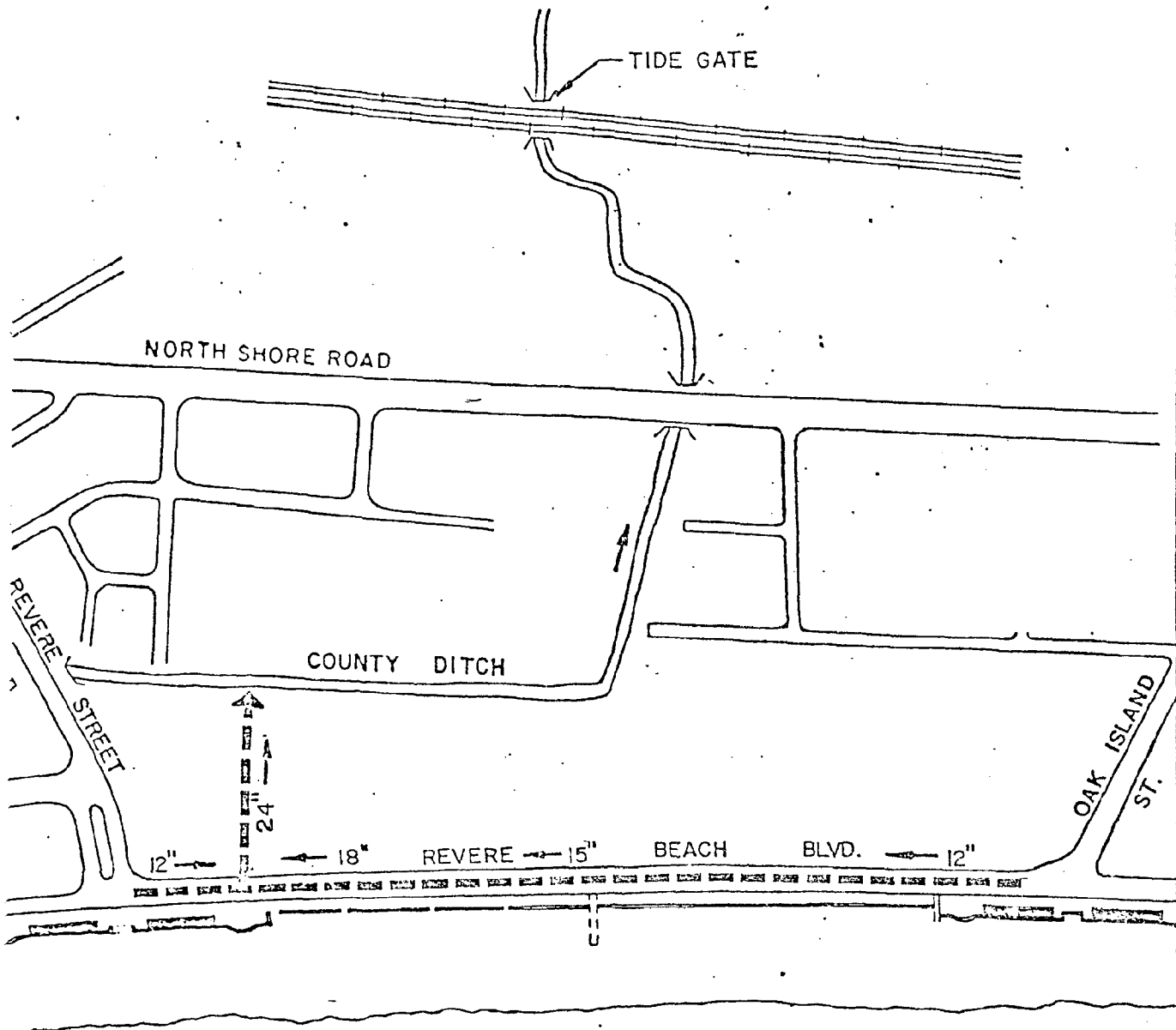
to County Ditch is not important. Only a single 54" pipe is shown, but two or more smaller pipes could be used. The pipe sizes listed on the plans in the Master Plan Final Report should be possible because Ocean Avenue will be raised approximately three feet at its lowest point.

#### Flooding

Severe flooding is caused by waves overtopping the seawall. Waves may continue to overtop the seawall, but none of this water should flow beyond Revere Beach Boulevard because of the height of the Park. Minor street flooding should no longer be a problem once the new drainage systems are installed, provided proper maintenance is performed. During extreme storms, flooding from water flowing over the railroad tracks from the west should still be a problem.

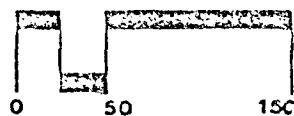
LR-6  
TJMurphy:ec

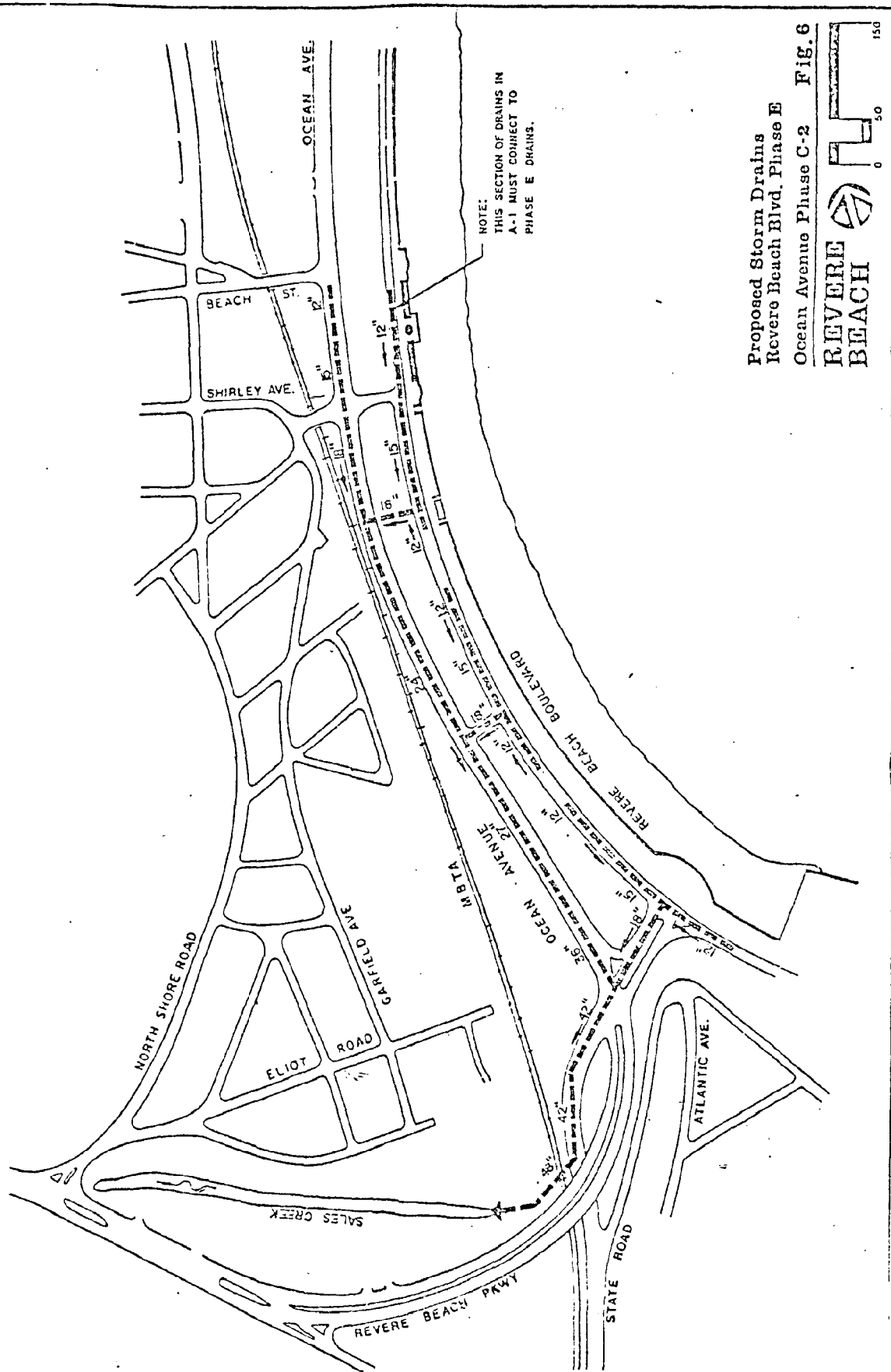




Proposed Storm Drains  
 Revere Beach Blvd. Phase A-2 Fig. 5

REVERE  
 BEACH





Proposed Storm Drains  
Revere Beach Blvd. Phase E  
Ocean Avenue Phase C-2 Fig. 6

REVERE  
BEACH



Coordination with the Metropolitan District  
Commission Regarding Improvements to  
the Eastern County Ditch

## Introduction

The purpose of this work task was to ascertain the improvements proposed by the Metropolitan District Commission (MDC) relative to the Revere Beach Area of the City. Critical to any design for improvements to the City's storm drainage system was a determination as to the disposition of the sea water that over-tops the sea-wall along Revere Beach Boulevard, and ultimately drains into the County Ditch.

## Drainage Design for Revere Beach Reservation

On Tuesday, March 6, 1979 the CZM Study Director met with Henry Higgott of MDC, Thomas J. Murphy of Fay, Spofford and Thorndike and Craig Halvorsen of Carol R. Johnson and Associates.

The purpose of the meeting was to provide the City of Revere with a status report on the drainage proposals of the MDC.

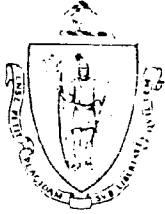
Mr. Murphy explained that it was his design goal to eliminate all of the wave overtopping of the seawall along Revere Beach Boulevard. The system described in the attached report is designed to do that. Therefore, Mr. Downes and Mr. Haan can proceed to design a system for the Eastern Branch of the County Ditch which drains precipitation in the drainage area and not sea water.

Basically, the proposed improvements for the Revere Beach Reservation consist of the creation of two holding basins on Revere Beach Boulevard, north and south of the pavillion opposite Wonderland. This element together with the proposal for a regrading of the park between the Boulevard and Ocean Avenue in order to create a protective embankment, appear to be sufficient to keep most of the ocean, under storm circumstances out of the City's drainage system.

It is recommended that the MDC be included on the Flood Study Coordinating Committee that the Mayor should request as part of the final EIS for the Revere Beach Connector and the North Shore Transit Improvements Project.

The work of this committee should also include a formula for the distribution of the cost of the improvements to the County Ditch, and the agreement of all parties.

Disposition of Items Raised at the  
March 29th, 1979 Meeting  
on Wetlands Protection within  
the City of Revere



THE COMMONWEALTH OF MASSACHUSETTS

DEPARTMENT OF THE ATTORNEY GENERAL

JOHN W. MC CORMACK STATE OFFICE BUILDING  
ONE ASHBURTON PLACE, BOSTON 02108

FRANCIS X. BELLQTTI  
ATTORNEY GENERAL

May 3, 1979

George V. Colella, Mayor  
City of Revere  
29 Broadway  
Revere, MA 02152

Re: Wetlands Protection Within the City of Revere

Dear Mayor Colella:

I asked Rod Gaskell, our wetlands resource advisor, to prepare the enclosed memorandum reviewing some of the wetlands enforcement problems and possible solutions we discussed at our March 29th meeting.

In recent weeks we have made great progress with your city counsel in the negotiations to resolve the Attorney General's wetlands suit. I expect that we will execute a Consent Judgment shortly. Resolution of this litigation should contribute substantially to abating the city's own wetlands violations so that you can turn your attention to the problems posed by private violators.

We are prepared to render assistance in the latter area. As I mentioned during our meeting on the 29th, criminal prosecutions by this office for particularly egregious violations should aid the city's own enforcement efforts. We have just received a report of such a violation from Mr. Villiotti which is now under investigation. Although this office will assist the city, as a matter of general practice you should make every effort to resolve these problems at the local level. I have enclosed a pamphlet outlining recommended wetlands enforcement procedures that we prepared in conjunction with the Department of Environmental Quality Engineering.

We are concerned about reducing the wetlands violations occurring in the City of Revere. It appears that the city has

George V. Colella, Mayor  
Page 2  
May 3, 1979

already taken the first significant steps in that regard. I look forward to your continued cooperation.

Very truly yours,

A handwritten signature in dark ink, appearing to read "Anton T. Moehrke", with a long, sweeping horizontal stroke extending to the right.

Anton T. Moehrke  
Assistant Attorney General  
Environmental Protection Division

ATM:dap  
Enclosure  
cc: Richard A. Villiotte, Esq.  
Paul Levenson, Esq.

M E M O R A N D U M

To: ANTON MOEHRKE,  
Assistant Attorney General

From: RODERICK GASKELL *R.G. Gaskell*  
Wetlands Science Adviser

Date: April 2, 1979

Subject: SUMMARY OF THE MARCH 29th  
REVERE WETLANDS MEETING

---

This memorandum is intended to serve as a summary of our discussions with Mayor George V. Collela and his staff during this meeting (see attached list of attendance).

At the meeting we identified the following problems which make wetland protection particularly difficult in Revere:

1. Much of Revere is subject to the jurisdiction of the Wetlands Protection Act because the City is located along the Pines River Estuary and receives severe impact from coastal storms. Consequently "by-the-book" administration of the Wetlands Protection Act in Revere would require an extra effort compared to other communities.

2. Most of the non-wetland area of Revere is developed. Therefore, there is significant pressure to fill in wetlands to create non-building sites.

3. Revere is in a location convenient for the disposal of construction debris and rubbish by contractors doing work in surrounding communities. In addition, there is no approved land-fill site in the City.

4. Many Revere citizens, businessmen and municipal employees do not understand the relationship between filling wetlands and flooding in the City or the importance of the Revere salt marsh to the coastal ecosystem. They view wetlands as waste-lands which are useful only when filled.

We made the following suggestions for the City to follow in order to improve wetlands protection in Revere:

1. Wetlands Protection Act applicants, including the City, could consolidate projects which recur routinely and which are substantially similar. For example, the City could file a Notice of Intent, with supporting documentation, for the maintenance

of all of the drainage ditches in Revere. The drainage ditches could then be viewed as a total system and the time required to prepare the application, review the project and issue the Order of Conditions would be greatly reduced.

2. Prepare maps for public display and distribution showing areas subject to the Wetlands Protection Act. They could simply be a compilation of existing maps and data such as the Department of Environmental Management's wetlands restriction maps, U.S. Army Corps of Engineers' flood data, H.U.D. Flood Insurance maps and data and City engineering studies. Although these maps would not override the Revere Conservation Commission's authority and responsibility to make case-by-case determinations of applicability of the Wetlands Protection Act, they would reduce doubt and confusion.

3. Conduct a public information meeting for Revere citizens, businessmen and municipal employees to explain the purposes and procedures of the Wetlands Protection Act. Major emphasis would be placed on the importance of wetlands protection in Revere. Representatives from the Office of Coastal Zone Management, the Department of Environmental Quality Engineering and our office might assist the City in conducting this meeting.

4. Provide a proper site within the City for the disposal of noncombustible solid waste. (Combustible solid waste can be trucked out of the City for incineration as it is in surrounding communities.) The Department of Environmental Quality Engineering has offered to consider prompt approval of such a proposal if the City can find a non-wetland site, preferably an abandoned waste disposal area.

For further information concerning this suggestion, the City should contact:

Mr. William St. Hilaire, Chief  
Land and Water Use Section  
N.E. Regional Office of the  
Department of Environmental  
Quality Engineering  
Tewksbury State Hospital  
Tewksbury, Mass. 01876 727-7908

5. Identify the location on a city map of all state D.P.W. guardrails and fences which are in disrepair. Indicate those locations where access to wetlands for dumping is made possible as a result of this disrepair. Send the completed map to our office.

6. Call any of the following state offices whenever there are questions concerning administration or enforcement of the Wetlands Protection Act:

Office of Coastal Zone Management	727-9530
Department of Environmental Quality Engineering, Wetlands Division	727-9707
Department of the Attorney General, Environmental Protection Division	727-2265

RG:JK  
Attachment



ATTENDANCE, MARCH 29, 1979

REVERE WETLANDS MEETING

William Clendaniel, Counsel  
Coastal Zone Management  
100 Cambridge Street  
Boston, MA 02202  
727-9530

Marion Craven  
Project Planner  
CZM Study Grant-City of Revere  
Office of the Mayor  
Revere City Hall  
281 Broadway Street  
Revere, MA 02151  
284-3600

Raymond Marino  
N.E. Region Engineer  
D.E.Q.E.  
Tewksbury Hospital  
Tewksbury, MA 01876  
727-7908

Anton Moehrke  
Assistant Attorney General  
Environmental Protection Division  
1 Ashburton Place  
Boston, MA 02108  
727-2265

Jay Satin, Counsel  
Revere Conservation Commission  
Revere City Hall  
281 Broadway Street  
Revere, MA 02151  
284-3600

Richard Villiotte, City Solicitor  
City of Revere  
Revere City Hall  
281 Broadway  
Revere, MA 02151  
284-3600

Steven Fedor, Superintendent  
Revere Department of Public Works  
Revere City Hall  
281 Broadway  
Revere, Mass. 02151  
284-3600

Roderick Gaskell  
Wetlands Science Adviser  
Department of the Attorney General  
Environmental Protection Division  
1 Ashburton Place, 19th Floor  
Boston, Mass. 02108  
727-2265

Frank Gaynor  
Assistant Attorney General  
Department of the Attorney General  
Environmental Protection Division  
1 Ashburton Place, 19th Floor  
Boston, Mass. 02108  
727-2265

Terry Geohegan  
Project Director  
CZM Study Grant - City of Revere  
Office of the Mayor  
Revere City Hall  
281 Broadway  
Revere, Mass. 02151  
284-3600

Peter Kortright  
Coastal Zone Management  
100 Cambridge Street  
Boston, Mass. 02202  
727-9530

Paul Levenson, Esquire  
Lappin, Rosen, Goldberg,  
Slavet, Levenstein & Wokstein  
1 Boston Place  
Boston, Mass. 02108  
261-1000

# The City of Revere Massachusetts

George V. Colella  
Mayor



City Hall

281 BROADWAY  
REVERE, MA 02151  
284-3600

Office of the Conservation Commission

## MEMORANDUM

TO: Sterling Wall, Staff Geologist, D.E.Q.E.

FROM: Jay Paul Satin, Revere Conservation Commission *JPS*

DATE: May 30, 1979

RE: Generic Order of Conditions

On March 29, 1979, a meeting was held in Revere concerning enforcement of the Mass. Wetlands Protection Act. Represented at that meeting were: Mass. Attorney Generals' Office, Coastal Zone Management Office, Dept. of Environmental Quality Engineering, Revere Conservation Commission, and other City representatives. One result of the meeting was to devise the use of a "generic Order of Conditions" to include maintenance work performed by the Revere Public Works Department.

In the past my office, and I'm sure your office as well, has been frequently contacted about our local Public Works Department engaged in alleged violation of the Wetlands Protection Act. Upon investigation I have found the majority of these cases to be performance of maintenance work (cleaning of ditch systems, installation of protective barriers, etc.).

Because of the often lengthy and time consuming procedure of filing a Notice of Intent, conducting a public hearing, issuance of an Order of Conditions, and the often occurring appeal procedure, these maintenance projects would be held up to the detriment of the community. Therefore, the participants in the above mentioned meeting agreed that the Conservation Commission could handle these matters in a more abbreviated fashion.

We are still requiring the Public Works Department to file a Notice of Intent with us, although we are relaxing the requirement of the public hearing and formally-issued Order of Conditions.

If there are any questions as to this procedure, please feel free to contact me. Thank you.

cc: Mayor George V. Colella



GEORGE V. COLELLA  
MAYOR

THE CITY OF  
REVERE, MASSACHUSETTS

OFFICE OF THE MAYOR  
CITY HALL

June 1, 1979

Mr. William St. Hilaire, Chief  
Land and Water Use Section  
N.E. Regional Office of the  
Department of Environmental Quality Engineering  
Tewksbury State Hospital  
Tewksbury, MA. 01876

Dear Mr. St. Hilaire:

As a result of a meeting on March 29, 1979 between representatives of the Commonwealth and the City of Revere (see attached memorandum) to discuss the wetlands in the City, your services were mentioned as being available to the City in order to determine a temporary "dump site" for noncombustible solid waste.

When your schedule permits, I would like to coordinate a meeting of appropriate City personnel so that we can begin the site selection process.

I can be reached at 284-3600, ext. 114.

Yours truly,

Terrence Geoghegan  
Special Assistant to the Mayor

Attachments

cc: George V. Colella, Mayor  
Jay Satin, Conservation Commission  
Steven Fedor, Department of Public Works

Roderick Gaskell  
Office of the Attorney General  
1 Ashburton Place, 19th floor  
Boston, MA. 02108

Anton Moehrke  
Office of the Attorney General  
1 Ashburton Place, 19th floor  
Boston, MA. 02108



GEORGE V. COLELLA  
MAYOR

THE CITY OF  
REVERE, MASSACHUSETTS

OFFICE OF THE MAYOR  
CITY HALL

July 13, 1979

Mr. Roderick Gaskell  
Office of the Attorney General  
1 Ashburton Place, 19th Floor  
Boston, MA 02108

Dear Mr. Gaskell:

In response to Recommendation Five of your memo of April 2, 1979,  
we are submitting the attached map.

This map does not indicate all the missing guardrails and fences on state property, but, the most serious area. The missing fences in the area shown on the map allow people vehicular and pedestrian access to the I-95 embankment. There is a problem with dumping and the use of "off-road vehicles."

We appreciate your attention in this matter.

Terrence Geoghegan

*Terrence Geoghegan*  
Special Assistant

cc: George V. Colella, Mayor  
Jay Satin, Conservation Commission

Anton Moehrke  
Office of the Attorney General  
1 Ashburton Place  
Boston, MA 02108

TG/rb

Review Comments of the City of Revere  
on the Draft Environmental Impact Statements  
for the Revere Beach Connector and the  
North Shore Transit Improvement Project

REMARKS OF GEORGE V. COLELLA, MAYOR, CITY OF REVERE MADE AT THE JOINT PUBLIC HEARING ON JUNE 27TH AT REVERE HIGH SCHOOL FOR THE REVIEW OF THE DRAFT ENVIRONMENTAL IMPACT STATEMENTS FOR THE REVERE BEACH CONNECTOR AND THE NORTH SHORE TRANSIT IMPROVEMENT PROJECT.

Ladies and gentlemen, we have before us a proposal, to build two major transportation facilities in the City of Revere. I am pleased to see that the proposal is being discussed at a joint public hearing, for these two projects are inter-related in a number of ways.

We are being asked, do we approve the concept as it is being presented to us today? It is always difficult to comment on a concept without some idea as to the details. And in our City, the details are of importance, because they are items such as flooding and drainage, and proper growth and development.

In looking at the proposals for the Blue Line and the Revere Beach Connector, I first asked myself how these projects could be of benefit to the City of Revere?

As with any project of this magnitude, \$65 million for the improvements to the Wonderland Station complex and \$31-\$47 million dollars for the Revere Beach Connector, there are bound to be mixed blessings.

On the positive side, these proposed Transportation Projects will benefit the City by providing the necessary economic stimulus to Revere Beach. The Wonderland garage and station and the Revere Beach Connector are the missing link in our plans for the revitalization of the Revere Beach area of the City.

We are fortunate in having approximately 20 acres of prime development land, one of the few vacant ocean-front tracts of this size in the greater Boston metropolitan region. These transportation projects will stimulate development and improve the marketability of the area by making the City more accessible to a greater number of people.

These opportunities for economic growth and the creation of more jobs, particularly on our own Parcel H, will be severely impaired should these projects not become a reality.

But the economic stimulus is not the only benefit to the City of Revere. The MBTA improvements will provide the citizens of Revere with better access to employment centers. This, in an age of increasing fuel costs and more and more frequent energy shortages is quite a benefit to the City. The Connector road will provide access to the transit service so that residents of the western portion of the City will be able to drive quickly and easily to the Wonderland Station and Revere Beach.

And more importantly, traffic congestion relief on neighborhood streets will make these neighborhoods safer for children. Traffic noise and air pollution will be reduced and through traffic and automobiles bound for regional facilities such as Revere Beach will use the Connector rather than Revere Street, Beach Street or Shirley Avenue.

And finally, the transportation projects also provide the City with the opportunity to coordinate improvements to our drainage ditch system, with financial participation of all agencies involved in the City's comprehensive drainage recommendations for the eastern branch of the county ditch.

Just as there are benefits, there are serious questions about drainage in the eastern branch of the county ditch, and about land use compatibility and buffer zones in the Bay Road - Ellerton Street - Oak Island areas, and about traffic circulation on Ocean Avenue and at the Revere Street - Ocean Avenue - Revere Beach Boulevard intersection.

On one hand there is little chance of needed improvements to the City if these concepts are rejected .... and .... on the other hand there is a need for close attention to be paid to these projects as they effect the City .... if these concepts as stated in the two draft EIS's, are approved.

The review process allows a city to make recommendations for questions to



be answered, to suggest proposals to be reviewed, and to offer comments on the comparison of the alternatives.

All of the viewpoints expressed on the Draft Environmental Impact Statements have to be addressed in the Final Environmental Impact Statement and at the public hearing on that document.

Seeing as how the process leading to construction is a refinement process, I have decided to endorse the Revere Beach Connector and the North Shore Transit Improvement Project, WONDERLAND UPGRADE ALTERNATIVE, with recommendations for the final Environmental Impact Statement.

The benefits accrued to the City as a result of the Wonderland Upgrade Alternative are obvious. But, I don't see any real benefits to the City from the Blue Line Extension beyond Wonderland. In theory, the Lynn transit stations should reduce traffic volumes on Revere streets by capturing commuters from North Shore communities who are presently using the park and ride facilities at Wonderland. But, I suggest, that as Mayor of this City, I would need to understand what other benefits might accrue to Revere should the transit be extended to Lynn ... and I would ask the MBTA to itemize these benefits and clarify this issue for the citizens of Revere.

The City makes this endorsement conditional upon a sincere commitment by both the Department of Public Works and the Massachusetts Bay Transportation Authority to build first class facilities in this City.

At the municipal level, we are acutely aware of the shortage of funds and the competition for funds, for example, the competition for funds between the North Shore Transit Improvement Project and the third Harbor Tunnel.

And, the City is aware of rumors regarding a possible shift of funds from the Southwest Corridor project and the Red Line Extension North to the Blue Line improvements.

Just as every other city wants the best for itself, so do we want the best project for Revere.

I will now summarize my concerns and recommendations for both the DPW and MBTA projects.

My first recommendation, though not in the environmental field, is for a supplementary paper which realistically assesses the chances of funding and discusses a timetable for construction of all phases of these projects.

My second recommendation is that the MBTA and the MDPW conduct an intensive community participation program for the residents of the immediate neighborhoods to see what buffer elements are needed and to see if some people would want to relocate.

The results of this program should be made part of the Final EIS.

Thirdly, the Central Transportation Staff should undertake a comprehensive analysis of local and regional traffic patterns in the Revere Beach area to address the observations made in the attached report.

My fourth recommendation concerns the area of flooding and drainage which is one of the areas that troubles me the most. All of these projects are interdependent, and future drainage is one of the key links.

I recommend that the Commissioner of the Department of Public Works and the Chairman of the Massachusetts Bay Transportation Authority, jointly set up a coordinating committee of representatives from the Metropolitan District Commission, the City of Revere, the Atlantic Savings Bank, the MDPW and the MBTA to determine the right design solution to the flooding in the drainage area of the eastern branch of the county ditch, and further, to divide the costs for these improvements. The work of this committee should also be part of the Final EIS.

The City's fifth recommendation is that there be a section of the Final EIS which outlines the nature of the community liaison program that will be needed by both the MBTA and MDPW to address problems that may occur during the construction process such as increased truck traffic, the need for staging areas, temporary roadways and dams and the like.

The sixth recommendation is for a confirmation of the results of the "Revere Beach Parking Study" completed by CTPS on December 15, 1978.

We are of the understanding, that study was interpreted by the MBTA as concluding that the size of the Wonderland garage should be 2,000 vehicles in both the Wonderland Upgrade and Blue Line Extension alternatives.

Our seventh recommendation concerns the Revere Beach Connector. At this time in the design process, the City prefers Alignment B. We feel we can balance the need for protecting abutting neighborhoods against the Connector's intrusion into the Saugus Marsh by choosing that alignment that is further north and recommend that the roadway by a viaduct from Route 107, Broadway to Revere Street.

The eighth recommendation also concerns the Revere Beach Connector, specifically that segment between Cutler Circle and Broadway. We feel this portion of the road can be constructed on an earthen embankment, provided the DPW presents a program for restoring the Saugus Marsh north of the alignment. This special analysis of restorative measures for the area around the Seaplane Basin should be made part of the Final EIS.

The ninth recommendation relates to the design of the Blue Line after it is extended north from Wonderland. There should be a number of design options presented for the open depressed section of the Blue Line that passes through Oak Island. Security, aesthetics and acoustics should be analyzed, with a number of detailed treatments offered in the Final EIS.

We offer these recommendations knowing full well the inter-dependence of these two projects, the Revere Beach Connector and the Blue Line Improvements as well as the restoration of the Revere Beach Reservation, the commercial development of Parcel H and the housing development of the Atlantic Savings Bank.

The current position of the bank regarding groundbreaking on the South Lot is unacceptable to the City of Revere.

It is our interpretation of the Tax Agreement and Supplemental Agreement that the Bank will have defaulted on the project if they don't break ground before April of 1980.

If this unfortunate delay should occur, the City will take the necessary steps to purchase the South Lot according to the terms specified in the Supplemental Agreement.

At this point it would be the plan of the City, with the concurrence of the Metropolitan District Commission to open that parcel to a competitive process for selection of a developer.

Many people in the public and private sectors have expressed an opinion of the very good development opportunities for Revere Beach.

These opportunities for development are contingent upon the appropriate transportation improvements, namely the Blue Line improvements and the Revere Beach Connector.

These two projects before us today, also pose opportunities for a rebuilt drainage system, local street traffic improvement, economic stimulation for new residential and commercial development, new people in the City of Revere who will shop in Revere, improved transit service and better vehicle access to the beach.

I trust that my administration and the staff of the MBTA and MDPW can continue to cooperate on the refinement process for the Revere Beach Connector and the Blue Line improvements.

A cooperative approach will bring about quality development .....

And in conclusion, while we have the MBTA and UMTA officials captive here in our high school auditorium ... I would like to close with the note that, the citizens of this City are still anxiously awaiting the long-promised NEW BLUE LINE CARS. We of Revere have put up with the inconvenience of breakdowns and the notorious noise and discomfort of the reportedly worst of the MBTA transit lines. And we have patiently awaited some sign of improvement.

So I suggest to you MBTA officials here tonight - that as far as the people of this City are concerned - the sight of those new cars running down the MBTA tracks will help us all feel more confident in the MBTA proposal before us tonight.

Thank You

RECOMMENDATIONS AND REVIEW COMMENTS  
ON THE  
REVERE BEACH CONNECTOR  
DRAFT ENVIRONMENTAL IMPACT STATEMENT

CITY OF REVERE  
OFFICE OF MAYOR GEORGE V. COLELLA

## 1. DRAINAGE AND FLOODING

Measures to mitigate the flooding and drainage impacts of the Connector on the City of Revere are of major concern. The viaduct design is, therefore, the supported alternative. Viaduct would permit a more natural flow of the streams within the Saugus Marsh and would not eliminate floodwater retention areas as the fill embankment alternative would.

The Draft Environmental Statement (DEIS) does not adequately address measures for treatment of runoff from the Connector Road. Section 4.F.6. of the DEIS states that runoff from the road would be collected by an enclosed roadway drainage system and placed in a retention basin in the vicinity of the B&M right-of-way, and from there piped into the ocean.

While we appreciate the MDPW's concern for not contributing additional urban runoff to the Marsh, we feel more information is needed regarding this sketchy outline of runoff treatment, particularly:

- a. the size and location of the retention area;
- b. the systems of traps and filters for roadway pollutants such as oils and heavy metals;
- c. the design of the ocean outfall, location and extension into Broad Sound, and this pipe itself- underground or above ground;
- d. treatment of runoff at intersections is not adequately addressed.

In addition the City would like to coordinate all drainage efforts of the MDPW, MBTA, and MDC in the area of the City east of the B&M right-of-way. We recommend that the MDPW participate in the City's comprehensive drainage study for the Eastern County Ditch. Further we recommend that all of the issues regarding drainage and treatment of runoff be coordinated with the City and addressed satisfactorily in the Final EIS.

## 2. OVERALL ROAD DESIGN

As mentioned, the City supports a viaduct design alternative so that the functioning of the marsh will be impacted to a lesser extent. The City also supports and recommends Alignment B which extends further northward into the Marsh, east of Route 107. This Alignment would not effect as severely the neighborhood north of Revere Street and Oak Island. It is believed that this northernmost Alignment would provide a buffer between the Roadway and the Neighborhoods which would lessen the impacts of noise and air pollution on the residential areas.

### 3. OCEAN AVENUE/REVERE STREET/CONNECTOR INTERSECTION

There is an obvious need for more coordination between the MDPW and the MBTA regarding the terminus of the Connector Roadway at Ocean Avenue. While this is presently a dangerous intersection due to the height of the bridge over the County Ditch, it is envisioned as more confusing due to the entrance of automobiles from another direction, north from the Connector.

Added to this is the fact that the MBTA's EIS mentions the need for enlarging the intersection to east and north. The MDPW's DEIS discusses replacement of lands taken from Sullivan Playground to that area identified by the MBTA for expansion of the intersection.

In order to assess this situation the City would require more analysis of traffic movements and volumes at this intersection and a coordinated map identifying all work to be located in the vicinity.

It is recommended that the functional design of this intersection be more clearly addressed in the Final EIS. Specifically, the size of the intersection, traffic volumes and movements, and signalization.

### 4. DESIGN OF ROADWAY BETWEEN THE B&M RIGHT-OF-WAY AND OCEAN AVENUE

The Ardadia Street and particularly the lower Revere Street neighborhoods will be most heavily impacted by the Connector due to its proximity to the homes, noise, air pollution from the road and the general aesthetics of the elevated ramps. It is assumed that the vacant land between these two neighborhoods will be almost completely filled with transportation improvements. While some residents of these areas may want to remain in this location, the possibility of the State Agencies involved buying properties and relocating households should not be dismissed. It is recommended that the MDPW work with the City on this issue and address the feasibility of real estate takings in the Final EIS.

### 5. INTERSECTIONS OF CONNECTOR WITH ROUTE 107 AND NORTH SHORE ROAD

Most of the traffic volume projections for the City were included in the DEIS Technical Appendix which, unfortunately, the City did not receive for review. Of particular concern are the two Connector intersections proposed at Route 107 and North Shore Road and the potential for added congestion on these roads due to the intersections. Although traffic congestion and alternative treatments of queues for left-turning traffic is mentioned, we have no means of knowing what volumes are there now and how those volumes will increase with the Connector and its intersections.

The City, therefore, strongly recommends that the Central Transportation Planning Staff (CTPS) undertake a coordinated traffic study of Revere to account for the traffic generated by the major development projects in the City. Further, we recommend that the study conclusions become part of the final EIS and that with these results the MDPW work with the City on the design of these intersections so that their impact on traffic flows will be clarified.



Thirdly, the design of the Connector's intersection with Route 107 is unclear. The City strongly recommends that eastbound and westbound access be provided for both north and south bound traffic on Route 107.

#### 6. SULLIVAN PLAYGROUND

The MDPW EIS states that a portion of the Sullivan Playground will be taken by the Connector Road, and that this recreational land will be replaced to the south and east, adjacent to Revere Street.

Because this will be a heavily travelled intersection, the City suggests that the feasibility of taking the entire active recreation portion of the Playground and replacing it elsewhere in the area be explored.

This is a local Playground which is used by the lower Revere Street and Revere Beach Boulevard neighborhoods. Since pedestrian access to the site will be impaired by the Connector traffic, this could become a very dangerous situation for children walking to the Playground. The suggestion for a crosswalk at the end of the Connector is not sufficient unless a pedestrian signalized light is included at the crosswalk.

Even with the signalized intersection, it is debateable that the Playground would be safe for the children in the area due to traffic volumes, or pleasant due to the noise and air pollution from the Connector.

It is recommended, therefore, that the MDPW, with the concurrence of the MDC, relocate the ballfield and tot lot to another location which will service the same neighborhoods. Working with the City and our three-year recreation plan, other sites such as the Mabie School could be identified and evaluated. Sullivan Playground could then become a passive recreation facility.

#### 7. PEDESTRIAN SAFETY

The possible increase in traffic volumes on North Shore Road would make pedestrian travel more difficult and dangerous for the Oak Island children. A signalized intersection with pedestrian cycle is recommended at Oak Island Street and North Shore Road.

Additionally, the maintenance or improvement of pedestrian travel along North Shore Road via safe sidewalks is required by the City. This pedestrian safety issue needs to be coordinated with the City and addressed in the final EIS.

RECOMMENDATIONS AND REVIEW COMMENTS  
ON THE  
NORTH SHORE TRANSIT IMPROVEMENT PROJECT  
DRAFT ENVIRONMENTAL IMPACT STATEMENT

Office of the Mayor  
George V. Colella, Mayor  
City of Revere  
June 27, 1979

### 1. SIZE OF THE GARAGE AT WONDERLAND

It is our understanding that Wonderland Garage should be sized at 2000 cars under both the Wonderland Upgrade and the Blue Line Extension Alternatives.

The results of the CTPS study of December 15, 1978, indicate that there are over 1500 cars parking in the Wonderland area today.

With the increased demand for parking due to the improvements to Revere Beach Reservation and the development of the North and South Parking Lots for housing, there should be a need for at least a 2000 car parking garage.

The City of Revere thought that this issue was settled as a result of the above-mentioned CTPS study.

### 2. WONDERLAND UPGRADE AS AN ALTERNATIVE

From the point of view of the City of Revere, the Wonderland Upgrade is not strictly a separate alternative, but rather the first "useable segment" of the Blue Line's eventual extension to Lynn.

The improvements to Wonderland, including the Revere Beach Connector, will have to be built before the Blue Line is extended to Lynn.

There should be a section in the Final EIS which notes the Wonderland Upgrade as a precondition to the extension of the Blue Line to Lynn.

### 3. 1985 NET NEW RIDERS

The figures contained in the Impact Summary Table on page ES-6 seem to indicate that the Wonderland Upgrade would only result in 921 Net New Riders in 1985.

The City of Revere finds it hard to believe that so few new people would become transit riders given the ever increasing cost of gasoline and the continual prospect of fuel shortages throughout the 1980's.

Table II-10 on pages II-46 shows the 24 hour boardings by year for each station on the Blue Line. In 1972 there were 3,500 boarding the Blue Line at Wonderland. In 1973, the year the OPEC Oil Embargo began (October of that year), there were 4,900 people boarding the existing Blue Line, with its outdated cars, at Wonderland.

The increase of 1,400 people or 40% is more indicative of the increased ridership one can expect associated with the Wonderland Upgrade in the year 1985 and beyond.

After all, unleaded gasoline has gone from the mid 60 cent per gallon mark to over 90 cents per gallon in the first six months in 1979.

No one expects the price to drop. Surely, the price will continue to rise, if the fuel is available at all.

This seems to mean that one can expect more people from Lynn, Nahant, Saugus, Malden and other North Shore communities to drive to Wonderland and take the rapid transit to Boston under the Wonderland Upgrade. There should be more people using the MBTA's buses to get to Wonderland.

We should like a reassessment of the net new ridership as a result of the Wonderland Upgrade in light of today's energy shortage and such a shortage being extended into the foreseeable future.

These new figures should be incorporated in the Final EIS.

#### 4. SULLIVAN PLAYGROUND

The MBTA's notion of traffic circulation for the Wonderland area includes the need to rebuild the Revere Street, Ocean Avenue, Revere Beach Boulevard intersection.

The MDPW mentions in their Draft EIS the possibility of expanding Sullivan Playground southward into the above-mentioned intersection.

It appears that pedestrian access to Sullivan Playground will become hazardous at best for children from the lower Revere Street neighborhood. We suggest that this area no longer be suitable as an active recreational area and that, with the concurrence of the MDC, the playground be turned into a passive recreational facility. It is further suggested that the MDPW, rather than replacing the recreation area taken for the Connector at the existing site, the MDPW participate in the City's three-year park program. In this way the active recreation facility could be replaced at the Paul Revere School or Mabie School park sites and serve the existing neighborhood population.

#### 5. TRAFFIC ON OCEAN AVENUE

The present proposals will result in increased traffic on Ocean Avenue, congestion at the intersection with Revere Street and increased traffic on Beach Street and North Shore Road north of Revere Street.

The City needs the results of the CTPS traffic analysis before it can comment on the proposed projects and their impact on traffic circulation.

This analysis should be made part of the Final EIS.

6. IMPROVEMENTS TO THE DRAINAGE SYSTEM

The NSTIP as proposed by the MBTA is going to have an impact on drainage as will the Revere Beach Connector, part of the Revere Beach Reservation, and the Revere Beach Development Project.

The City commissioned, through a MCZM Grant, its own study on the comprehensive drainage impacts of the above-mentioned project.

There should be common agreement on the new design and and it should be documented in the Final EIS.

NOAA COASTAL SERVICES CTR LIBRARY



3 6668 14110356 6